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ETHIOPIA

Alcatel Group Opens Addis Ababa Office

*55000061A Addis Ababa THE ETHIOPIAN HERALD
in English 14 Feb 90 p 1*

[Article: "Alcatel Group Opens Liaison Office Here"]

[Text] (ENA)—The Alcatel group, the largest European manufacturer of telecommunications equipment and the owner of a major share of the world's export market, has recently opened its East African liaison office in Addis Ababa.

The office is coordinating the corporation's activities in eight East African countries, including Ethiopia, Djibouti, Somalia, Rwanda, Burundi, Uganda, Kenya and Tanzania.

Mr de Maupeou, chairman of Alcatel-Africa said during his recent working visit to Ethiopian that the group owns important manufacturing units in several European countries, the USA, Mexico, Australia, Turkey, New Zealand, China and Taiwan.

Mr de Maupeou noted that the multinational group has developed industrial activities in 22 countries and has a presence in various ways in 110 countries.

The chairman of Alcatel Africa stated that the group realized a turnover of 13 billion US dollars in 1988 and that 12 percent of the annual turnover is earmarked for research development.

Mr de Maupeou said he is confident that the strengthening of the group's relationship with the telecommunications institutions of the region will contribute to the development of such services in Ethiopia as well as in the other seven East African countries.

A major contract for the supply of digital microwave equipment was signed recently between the Alcatel Transmission par Faisceaux Heartziens (AFTH), a French subsidiary of Alcatel and the Ethiopian telecommunications authority.

AUSTRALIA

OTC Limited Steps Up R&D Work

*90AN0152 Chichester INTERNATIONAL
TELECOMMUNICATIONS INTELLIGENCE
in English 15 Jan 90 pp 16-17*

[Article: "OTC To Almost Double R&D Expenditures in Next Few Years"]

[Text] OTC Limited, Australia's international telecommunications company, says it has maintained its position as one of the leaders in the worldwide information business in recent years through the guidance and advice provided by its Development Unit. The company spent some Australian $10 million in the 1988/89 financial year on programmes for researching and developing new and better services for its customers. According to OTC's 1989 Research and Development Report, published at the end of last year, the bulk of that figure (Australian $8.4 million) was spent in the laboratory environment through the R&D Group in OTC's Development Unit.

The Development Unit has had an impressive growth rate since it was established in 1983. The number of employees involved in R&D has risen from six in the 1984/85 year to the current figure of about 90. By 1991 the target is to have 130 R&D staff.

OTC Development Unit—R&D Expenditures

Financial Year	Australian $ (in million)
1984/85	0.7
1985/86	2.8
1986/87	3.9
1987/88	6.0
1988/89	8.4
1989/90*	11.0
1990/91*	15.0

* budgetted

OTC Managing Director, Steve Burdon, said these R&D figures "demonstrate the level of importance we (OTC) place on fostering technological and commercial innovation to ensure our customer needs are anticipated and met."

"However, it is the output of our R&D efforts which is the bottom line in any assessment, and I am pleased to say that OTC R&D has achieved some remarkable results by keeping the company at the forefront of telecommunications technology," he added.

Highlights from OTC's 1989 Research and Development Report include:

• The TASMAN 2 Technology Assurance Team of six engineers travelled to France to carry out a detailed review of the status of the 560 Mbit/s technology being developed by Alcatel for Australia's first submarine optical fibre cable system which will be laid between Sydney and Auckland (New Zealand) in late 1991. This review was a major factor in the granting of approval for Stage 1 of the TASMAN 2 contract.

• OTC announced the sponsorship of an Optical Fibre Technology Centre at the University of Sydney, contributing a sum of Australian $1.5 million over three years. The centre will carry out research and fabrication of specialised optical fibres for a variety of applications.

• A signalling protocol converter has been developed to allow interconnection between OTC's digital exchanges and those overseas carriers equipped with a different version of CCITT Signalling System No 7. Following successful trials, a number of units have been manufactured and are currently in use in OTC's network. Several overseas carriers have expressed interest in purchasing converters for their own use.

• Work is well advanced on the development of an intelligent network node which overcomes many of the functional constraints of OTC's existing telephone switching systems. This will enable more rapid implementation of new enhanced telephone services. The first application will be for virtual private network services being developed jointly with AT&T and KDD.

• A network of fast packet switches is being developed as a test bed for investigation into broadband network and service capabilities.

• Advanced software techniques involving a new object-oriented programming language C++ have been used successfully in the experimental implementation of CCITT signalling protocols. These software techniques will enable future switching systems to have greater flexibility in providing new services.

OTC is working with AT&T Bell Laboratories to develop C++ further, thereby obtaining early access to improvements in a powerful language which is rapidly becoming an industry standard.

CAMBODIA

Japan's KDD To Resume Telephone Links

55004303 Tokyo KYODO in English 8 Mar 90

[Text] Tokyo, March 8 KYODO—Japan's international telecommunications giant, KDD, will resume telephone communication with Cambodia via Moscow on Friday, breaking a 15-year phone blackout, the company announced Thursday.

The resumption of telecommunications with the country is made possible by the reopening of telephone service between the Soviet Union and Cambodia late last year, KDD said.

Operator-assisted calls will cost 2,880 yen for the first three minutes and 480 yen for each additional minute, the company said.

HUNGARY

Broadcast Frequency Shortage Discussed

*90CH0002A Budapest HETI VILAGGAZDASAG
in Hungarian 17 Feb 90 pp 71-72*

[Interview with Kalman Toth, Director of Frequency Allocation Division in the Ministry of Transportation, Telecommunications, and Construction, by Endre Babus: "The Electronic Press: Clogged Channels"—first paragraph is HETI VILAGGAZDASAG introduction]

[Text] The passage of press laws, modified in January, which grants even private citizens the right to set up radio or television studios, is still nothing more than written word. Due to the moratorium placed on the allocation of frequencies, no new studios can begin broadcasting. No one knows how long this enforced hiatus may last; at least that is the impression one gets from a conversation with Kalman Toth, Director of the Frequency Allocation Division in the Ministry of Transportation, Telecommunications, and Construction.

HVG: Since July 1989 there has been a ban on issuing broadcasting permits to new radio and television enterrises. Yet, according to recent rumors, others, such as the Voice of America, will start broadcasting from Hungary as early as 15 March this year.

Toth: Yes, I have heard, too, that that broadcaster wishes to establish a studio in our country. However, I do not know if the programs prepared in that studio would be broadcast to Hungarian listeners. Our office has not received an application containing such information.

HVG: News of this type seldom begins circulating without any basis. According to many people, it is conceivable that (like the "Sun-TV," which started broadcasting during the moratorium) various tricks will be used to introduce new TV programs.

Toth: I would not like to see events confused. When we announced the moratorium, we had aplications for 29 radio and 32 TV stations on file. Among the 61 applicants, there were some who already had permits to broadcast, complete studio equipment, and a ready editorial staff, and only were waiting for the delivery of broadcasting eqipment. Several cities among them, such as Szombathely or Debrecen, had spent about 10 million forints on setting up local television studios, yet, because of the moratorium, they still could not begin operations. Speaking for myself, I completely disagree with freezing municipal projects that are nearly operational. This is why we at the Ministry of Transportation, Telecommunications, and Construction (KOHEM) have compiled a list of those studios or stations (about a half dozen of these exist), in whose case it would be a mistake to further deny broadcast permits simply because there is a moratorium. As for "Sun-TV," it could begin broadcasting, because it had already acquired the required permits before the moratorium went into effect, and because it uses the broadcasting facilities of TV-1,

instead of setting up its own. I must state categorically, however, that not one of the apllicants that came to us after the moratorium has been granted a permit, and, naturally, we have no intention of changing this practice.

HVG: Mass communications in today's Hungary are characterized by a strange phenomenon. The direct party control that used to cripple the newspapers is, by and large, a thing of the past, while in the case of electronic media which reaches the greatest audience, the state invokes technical reasons for not allowing the development of free competition.

Toth: Last spring, when the feverish rush to establish radio and TV studios began in Hungary, it immediately came to light that, in accordance with the existing laws, the new national and regional channels cannot be authorized. Yet, nearly everyone referred to the inadequate technical facilities when justifying the introduction of the moratorium. In fact, that was the first time the government found itself facing some basic issues of mass communications, such as: What should the proportional size of central and local, or state-owned and private broadcasters, be, or what future limitations should be placed on commercial programming in Hungary? In theory, the moratorium was introduced to give the government time to make decisions concerning these newly emerging issues.

HVG: For months the Council of Ministers kept saying that it would create new laws on postal and press affairs to take care of the above issues. To this day, this promise has not been fulfilled. It would not hurt if, at last, they would reveal how many radio and television programs can be broadcast in Hungary today.

Toth: When it comes to this question, several grave misconceptions are commonly held. Many people have the view that we technicians have merely to list the available frequencies, after which the only task is for someone or some agency to allocate these in the correct manner. In fact, however, this should not be seen in the same light as the allocation of a given amount of newsprint among the various newspapers. After all, in theory there is no limit to the number of programs that could be broadcast in Hungary. At the same time, it is undoubtable that, due to international agreements, we can only dispose of a definite amount of frequencies. The question you posed may be likened to the question: How many houses could be built in Hungary? Obviously, one would have to clarifiy at least a few questions before one could give an answer. In our case, we would have to know, for example, the location and nature of broadcasting facilities under consideration, and this has not been explained to us to this day.

HVG: Do you have any suggestions, for example, on what the proportion of state-owned and privately owned electronic communication facilities should be?

Toth: We have worked out several proposals along that line, but we are not the ones making the decisions. In order to illustrate our conept, let us consider the present

situation in television programming. As of now, Hungarian Television uses only about 50 percent of the programming time reserved for it on two channels. At the same time, there are several dozen firms that are waiting for permits to initiate independent programming. In my view, we should not be intimidated by the idea of the state taking the capacity left unused by Hungarian Television and sell it, perhaps at auctions, at the prevailing market prices.

HVG: In your estimate, how much profit would this bring to the national budget?

Toth: We have no data for that. However, it would be worth recalling that Hungary's TV-1 broadcasting network, and especially the TV-2 network, are far from being developed to their fullest extent. If we were to sell even a portion of broadcasting facilities left unutilized by Hungarian Television, the profits thus gained could be used for enlarging the broadcasting network. For myself, I would find it feasible in the future to allow domestic or foreign firms to construct the facilities used to broadcast state-sponsored programs, in return for

which they would be compelled to broadcast state programs between 2000 and 2300 hours. The remaining time they could use in accordance with their concepts. We could also stipulate that entrepreneurs could retain ownership of the stations they have built for ten years, after which they would have to turn them over to the state. In subsequent years, the state would broadcast its own programs via the previously private facilities.

HVG: Many people feel that the possibility still exists for Hungarian Radio and Hungarian Television to sell their allocated frequencies "under the table" to private firms. There is the rumor, for example, that a certain Agro TV will begin broadcasting in the near future via one of Hungarian Television's channels. It is said that several political parties, which count on receiving a number of ballots from the countryside, are quite supportive of this idea.

Toth: Indeed, such initiatives exist. However, as stipulated by the moratorium, as long as there is a freeze on allocating frequencies, we are not issuing permits to undertake this type of broadcasting activities.

"Frozen" Applications for Starting Radio or TV Stations (National or Regional)

Applicant	Type of Program	Character of Program	Time Span	Area Coverage
Co-Nexus, Incorporated	Radio	Commercial	16 hrs./day	North Transdanubia
Radio Bridge	Radio	English language, entertainment, commercial	24 hrs.	Budapest
Trans-Pannonia	Radio	Austro-Hungarian, commercial	12 hrs.	Eastern Austria, Burgenland
Unternehmens Werbeberatung Radnai	Radio	Commercial	Not given	Within 40 km of Szeged
Penzugykutato, Incorporated, Pannon TV Tarsasag, Limited	TV	Ethnic	12 hrs./day	Hungary and Burgenland
Pecs Regional Studio	TV	Commercial	Twice weekly (2300-0100)	South Transdanubia
Movi-Nap TV, Limited	TV	Commercial	Daily 0530-0830	Hungary
Tarsadalmi TV	TV	Political programs of dissident organizations	Mondays	Hungary
Szobotka-Consult GMBH	TV	Commercial	Not given	Vienna and region
Szobotka-Consult GMBH	Radio	Commercial	Not given	Vienna and region
Laszlo Hanko	TV	Commercial	Not given	Budapest
Radio Pannonia	Radio	Commercial	Not given	South-West Hungary
Budapest Radio	Radio-TV	Public affairs, politics	24 hrs.	Budapest
Echo Mass Communications, Limited	TV	Service	10 hrs./day	Balaton and region
Budapest-Vienna World Exposition	Radio-TV	Commercial, cultural	Not given	Austria
Controll Coop.	Radio	Advertising, economic policies	3 hrs. twice daily	Budapest
World Exposition-Budapest Council	Radio	Commercial	Not given	Budapest
Pannonia-Media	Radio	Commercial	Not given	Austro-Hungarian border region

"Frozen" Applications for Starting Radio or TV Stations (National or Regional) (Continued)

Applicant	Type of Program	Character of Program	Time Span	Area Coverage
National Commercial and Credit Bank, Incorporated	Radio	Commercial	Not given	Nation-wide
Interedition	Radio	Commercial	Not given	Sopron region
Balaton management council	Radio	Informative	Not given	Balaton
Continental-Industrial Company	Radio	Commercial	Not given	All highways
Aero-Caritas	Radio	Commercial	Not given	Highways
Galileo Radio	Radio	Commercial	Not given	Budapest
Nepszabadsag	Radio	Informative	Not given	National
Italian-Hungarian Joint Enterprise	TV	Youth policies	4 hrs. twice daily	Budapest
Youth Community TV (KISZ CC)	TV	Youth issues	4 hrs. twice daily	Budapest
Hungarian Postal Service (Budapest commercial channel)	TV	Commercial	Not given	Budapest
MAFILM	TV	Entertainment, pop. information, advertising	8 hrs./day	Budapest
Budapest Youth (KISZ-DEMISZ)	Radio	Youth issues, commercial	1200-1400 daily	Budapest
Union of Musicians	Radio	Entertainment, commercial	16 hrs./day	Budapest and region
Szekesfehervar Municipal Council	Radio	Not given	Not given	Szesfehervar and Lake Velence

The KOHEM has 38 additional applications on file.

Source: Ministry of Transportation, Telecommunications, and Construction

YUGOSLAVIA

Yugoslav Firm To Build Alcatel Digital Switch

90AN0151 Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE in English 15 Jan 90 p 8

[Article: "Alcatel/EI E10 Switch Manufacturing Agreement"]

[Text] Alcatel has confirmed to ITI that it is to set up a joint venture in Yugoslavia to manufacture its E10 digital switch.

The as yet unnamed company will be a joint venture between Alcatel and Yougoslave Elektronska Industrija (EI), with Alcatel holding 51 percent. Alcatel says the cost of the investment is over Fr 100 million.

The new company will have capacity for manufacturing 100,000 lines a year and, Alcatel says, the Serbian PTT will order more than one million E10 lines over the next 10 years. Presumably, none will be exported. Operations are to begin shortly.

Ericsson also supplies its AXE digital switch to Yugoslavia, having orders for or having installed over 80 exchanges by October 1989, which will ultimately provide over 350,000 local and nearly 130,000 trunk lines.

At press time, Alcatel was unable to confirm or deny radio reports that it had concluded a $500 million contract also with EI covering a transfer of technology to a new joint-venture company for the joint production of telephones, PCs, workstations, and mainframes. The reports added that at least 20 percent of the joint venture's output would be exported and that Alcatel would grant the Serbian PTT credit for purchases of new equipment with a minimum grace period of three years. The two partners are reported to be investing $25 million in the joint company.

Videotex System Implemented in Croatia, Slovenia

90WT0038A Zagreb VJESNIK in Serbo-Croatian 4 Feb 90 p 17

[Article by Miroslav Rosandic: "Zagreb Gets Videotex"]

[Text] The signing of an agreement between the British firm GPT and the PTT [postal, telephone, and telegraph] organizations of Croatia and Slovenia for the purchase of

a videotex system marked the end of our lagging behind Europe, at least in this area. Unfortunately, we are already 10 years behind.

Of course, we can always console ourselves with the fact that even our technological sluggishness has its advantages. It is easier to choose a system standard, there are more potential users, and part of the infrastructure has already been built. And so from the outset we avoid the danger of finding ourselves in the position of Hungary, the first socialist country with an installed videotex system (still in the experimental stage). The Hungarians have made it part of the preparations for the World Exposition, but at this moment they have neither providers nor users of the videotex services themselves.

What is Videotex?

Many readers are probably not familiar with videotex. First of all, it has to be distinguished from teletext, which we will also be able to use in the near future, from Zagreb Television. The crucial difference is that teletext works in one direction and videotex in both. Teletext is "mixed" with the television signal, and the most that the viewer can do is read the information served to him at a specified time. In the case of videotex, which is based on a telephone connection, the user finds himself in an interactive role with a broad range of possibilities.

Videotex, which in effect is the first telematic service which enters the area of data processing as well as that of telecommunications, is intended for a large group of users. It consists of a videotex station (a terminal connected to a telephone), a videotex center, a telecommunications network, and a service provider (database).

We currently have a network (understood to mean a conventional telephone system and part of a data transmission system, the well-known JUPAK) and potential service providers. The agreement signed on Friday with the British solves the problem of acquiring a videotex center and connecting nodes. We asked Dr. Antun Mikec, head of the division for use of computers in telecommunications of the Zagreb PTT Development Department why the choice fell precisely on the British rather than, say, the French, who have the most highly developed system in Europe with 4.5 million users.

"Three standards predominate today on the continent of Europe, the British Prestel, the West German Cept, and the French Antiope, which is used only in France. The German standard is highly sophisticated and of exceptional quality (the user terminals are in color and have graphic capabilities). Consequently, however, they are also expensive and infrastructurally demanding, and so are inaccessible to us, while the French system uses cheap terminals (as does the English) but is designed so that every telephone exchange must also have integrated into it a component meeting the needs of the videotex connections, and this is not feasible for us. In addition, the GPT hardware and software solutions have been adopted by 18 countries around the world, including our neighbors Italy, Austria, and Hungary. Greece is now

introducing this system as well. When we considered all this, we saw that we almost had no choice. We selected the GPT as the most rational solution," states Dr. Mikec.

On the other hand, not many words need be wasted on the reason why only the PTT of Croatia and Slovenia is involved in this project. Much newspaper space has been devoted to the disputes over JUPAK, and it is a fact today that the database transmission network based on Tesla equipment is in operation only in Croatia and Slovenia. All the other republics, which have insisted on using manufacturers in these republics, are lagging behind. In addition, we can point out that the Zagreb PTT alone uses 20 computers and 700 terminals in its operations, while the PTT of one other entire republic does not have a single computer, and so there can be no talk of a common approach in assimilating technological innovations.

Primary Database in Zagreb

Our pilot videotex system is designed so that a videotex center (VMC) and primary database will be set up in Zagreb, while connection and concentration points (VIP) linking all users to the center in Zagreb will be installed in Ljubljana, Rijeka, and Split. An important point is that all these elements are modular in design, so that the connection points (VIP) can be expanded as required into centers with databases of their own. The system will also allow the formation of separate databases, something decided upon by major service providers for whom use of the PTT databases becomes too costly because of the volume of business.

The videotex can be put to a variety of uses—access to knowledge bases (our own and others around the world), connection to travel agencies (a European travel agency system is expected to be created by 1992), communication with a doctor, financial transactions (between banks, but also directly between citizens and banks), modern merchandising (catalogue sales), development of small business (offering of services by craftsmen, offices, lawyers, etc), support for the delegate electoral system, and so forth.

A basic requirement (unfortunately sometimes difficult to meet in Croatia) is that the videotex user must at the same time be a telephone subscriber. When the videotex system goes into operation, it will be necessary in order to establish connection with it to have a videotex station (that is, a monitor, keyboard, modem, and decoder; in some versions the station also contains the telephone itself), which is simply connected to an ordinary home telephone. Inexpensive terminal models currently cost around 200 pounds, and how they will be obtained in Croatia has not yet been decided. We know that the videotex boom took place in France precisely because the French PTT service decided to distribute the terminals to users free of charge. It still is not clear if it would be profitable for our PTT service to do something similar.

The large number of personal computer owners will also be able to use their computers as videotex system terminals by installing a videotex card. After the terminal has been switched on and a special number has been called,

the available services appear on the screen. The user selects what he wants, say the latest news from a particular area from the VJESNIK database. He is first informed how much this will cost him, and the process continues only when he accepts the charge. At first the services will be in Croatian, but in view of tourist needs thought is also being given to having individual segments in English.

Several options are available, because the user also can send various orders, or, if he has the authorization, instructions such as for financial transactions in his bank account.

The preliminary work to develop a pilot videotex system in Croatia and Slovenia has been in progress for about three and a half years now. Last Friday an agreement involving a million pounds was signed, but on the basis of realistic estimates commercial operation cannot be expected for another two years. As a first step connections will be established with major enterprises, then with small businesses, and only at the end with citizens in general. According to Dr. Mikec, the initial investment in videotex is not large. Heavier investment will be needed only when the number of users begins to rise sharply (in Italy there are 5,000 new users weekly; 12 million pounds are invested in the system every year), but by the same token this business should not be expected to become profitable very soon. We must understand that the initial cost is only investment in the infrastructure, and that the valuable effects can be measured only indirectly.

BRAZIL

Contract Delay Imperils Telecommunications Area

90ET0161z Sao Paulo ISTO E
in Portuguese 7 Feb 90 pp 34-42

[Article by Altamir Tojal and Carlos Jose Marques; followed by interview with Minister of Communications Antonio Carlos Magalhaes; date and place of interview not given]

[Text] Imagine the television stations going off the air—all at the same time. Imagine the banking system paralyzed—with no way to make payments by check or even to verify one's account balance because terminals at the bank branches are unable to get data from the central computers. Also imagine a good many towns being isolated from the rest of the country—with no telephone, fax, or telex links. And last, imagine the situation which large firms operating all over the country—Varig [Rio Grande Air Transport] and Petrobras [Brazilian Petroleum Corporation], for example—would find themselves in if communications between their computers were cut off.

That terrifying scenario—a fitting plot for a disaster movie—may become a reality in Brazil if our negligent government continues to delay a decision on the purchase of second-generaton Brasilsat satellites until the critical moment when there will not be enough time left to launch the new satellites and get them operating before the current ones collapse. If that happens, even all the electronic equipment at the Satellite Control Base in Guaratiba, Rio de Janeiro, will not be able to save the situation.

The tumultuous soap opera concerned with international competition to supply the two satellites that will replace Brasilsat-1 and Brasilsat-2 and to provide the launch service—a deal worth $300 million—has been on the air since the start of last year. There could not be a better title than "Star Wars" for this kind of soap, which involves international pressures, diplomatic plots, battles of information stirring up firms in the aerospace industry. and public figures who are "stars" in their own right, examples being the heads of government of big powers, industrialists, heavyweights in the business world, and military commands.

In their cool calculations concerning the projected demand for telecommunications services in coming years and the expected useful life of the current satellites, the experts at Embratel [Brazilian Telecommunications Company] certified in a technical document that "the ideal time for signing contracts with the winners of the bidding process would be October 1989" so that Brasilsat-3—the first of the next generation—"could be launched in August 1993." If that were done, and if everything went right, the replacement of Brasilsat-1, which entered space in 1985, could begin with no risk of breakdowns in telecommunications traffic and no need to restrict the growing demand for satellite utilization.

That ideal deadline has already passed, and the risk of collapse is increasing with every day that passes. The situation would be uncomfortable even if a quick decision had been made under the Sarney administration, but it could have been handled by selecting users and redistributing traffic to the ground networks. But if the launch rocket fails and loses that first satellite—and there is a more than negligible 15 percent chance that it will—the difficulties will become so much worse that large portions of the traffic will have to be excluded from the system. And if that happens, who is going to be knocked off the air? TV networks or the banks? Telephones or the computers of the big firms?

In the face of that threat, it is difficult to see why the government is not announcing the winners of the competition and speeding up negotiations with a view to signing the contracts as soon as possible. The excuses are many, even though the bids were opened last March— that is, almost a year ago. The minister of communications, Antonio Carlos Magalhaes, says he has not had time to decide which is best and also raises the argument that since we are the eve of a new administration, it is preferable to let the new team take responsibility for the choice. "I would rather let the new administration decide than have people saying that I took a bribe," he admitted in an interview with ISTOE (see below). There is also a strange controversy over the existence or nonexistence of the final report by the bid committee, which indicated the winners last November: Hughes of the United States for the satellite and Arianespace of France for the launcher. The minister says he is not aware of the document. The chairman of Telebras [Brazilian Telecommunications, Inc.], Almir Vieira Dias, claims that he tried unsuccessfully to deliver the report to the minister: "The minister asked that the president-elect's team be consulted before we submitted the report."

The minister's head-in-the-sand policy did not produce the desired effect. A copy of the document in question has been obtained by ISTOE. It was ready before the deadline in August, but was pigeonholed. Experts and executives at Telebras and Embratel who are on the committee are avoiding the press, but they have told friends that their superiors put pressure on them not to sign the document. "It is better if you do not sign it because the minister does not want to get that document," Vieira Dias allegedly told the experts during a meeting at Telebras in Brasilia back in November. Despite that, the document was signed the next day.

In turning up his nose at the report, Minister Antonio Carlos has done just the opposite of what he did in the recent case involving mobile telephones. The bidding in connection with mobile telephones went through evaluation procedures, also at Telebras, and was the object of a technical report awarding the contract to the NEC [Nippon Electric Company], one of whose stockholders is businessman Roberto Marinho. Once the committee's report was in his hands, the minister announced the result in record time. His response to criticism concerning favoritism was that the technical report had been

published in newspaper advertisements. For similar situations, two weights and two measures.

The minister's argument for pushing the decision off on the Collor administration is that the matter is too serious to be decided at the end of an administration's term of office. That would be a fair excuse if he had not been sitting on the matter since October of last year. With that as their excuse, Antonio Carlos Magalhaes and President Sarney as well are escaping pressure from the governments involved—chiefly those of the United States and France. The French Government is interested not only in defending Arianespace's bid to launch the rocket but also in ensuring participation by the French firms of Matra [Mechanics, Aviation, and Traction Company] and Alcatel [Alsatian Company for Atomic, Telecommunications, and Electronic Construction], which, along with British Aerospace and Brazil's Victori International (which is linked to businessman Roberto Marinho), make up the consortium known as Spar, whose bid to build the satellite was passed over by the bid committee. They are also escaping the additional pressure from the diplomatic war started by the United States against France and Canada to keep them from transferring space technology to Brazil.

Only a combination of huge doses of incompetence and negligence could result in a situation that is exposing the country to international ridicule and threatening one of the most strategic areas in the functioning of the economy. Although Deputy Renan Calheiros, who is one of the wild cards in the Collor administration's transitional team, refused to accept the hot potato represented by this decision when it was offered to him by Minister Antonio Carlos Magalhaes, the president-elect and the team accompanying him on his current world tour are doubtless already feeling the heat on this subject. Shortly before Collor began his trip, the vice president of Hughes Aircraft, Richard Bradberry, who has visited Brazil within the past 6 months, expressed the hope that "President Bush will show Collor the seriousness of a political decision that does not take the technical and financial advantages of our proposal into account." Immediately after that, he left for the United States, doubtless to pave the way with his government. There are similar expectations with respect to the visit to France. The host at Collor's meeting with the A-team of French businessmen will be none other than the group chairman himself, Jean-Luc Lagardere.

On the domestic front, last week was enlivened by the appearance in the press of an apocryphal report that in view of the deadlock, the urgency of the decision, and also the embarrassing circumstance that all this is happening during the transition between two administrations, Brazilian authorities might call for new proposals from the bidders in order to obtain lower prices. Right from the start, that would be of no interest to Hughes, which in this undertaking is a partner of the Brazilian firm of Promon Engineering, since the bid committee has already issued an opinion in its favor. But such a step would give Spar another chance. The choice is simpler as regards the launcher, since Arianespace's advantages were considered far superior to those of the bid by McDonnell Douglas of the United States. There is a very high likelihood that the Collor administration will reject the whole mess and decide to call for new bids. If so, the only thing left is to pray and hope that God will once again be a Brazilian. To keep the blackout from happening, the whole process will have to move with the speed of a spaceship, and nothing can be allowed to go wrong.

Besides the matter of price, something else at stake in the choice of satellites is a philosophical clarification involving the ability to foresee the country's future telecommunication needs and a decision as to who should decide what the country is really going to need. In specifying the capacity of the satellites in its call for bids, Embratel established a need for 56 channels (transponders) for civilian communications (the C-band) and 2 for military purposes (the X-band). That choice was based on the firm's projections concerning demand. Channels for more sophisticated services were not requested so as not to increase the cost of the undertaking, having in mind the government's financial limitations.

While Hughes offered a tailor-made satellite to meet the specifications in the call for bids, Spar proposed a much larger satellite with the capacity for additional sophisticated services. Its Brazilian partner, Victori, is trying to convince authorities that the Brazilian market will need such services and that private enterprise is prepared to bear the burden of responsibility.

In the squabble between consortiums, Hughes says that the Brazilian Government asked for a Volkswagen minibus and that that is precisely what Hughes came up with, while Spar is trying to push a much more expensive Mercedes Benz truck. In the battle underway between the competitors, the chief weapon seems to be the web of intrigue spun by both sides. Richard Bradberry of Hughes has described the offer of additional services by the consortium headed by Spar as "unethical." The Brazilian Government and especially the state-owned Embraer [Brazilian Aeronautics Company] were allegedly dazzled with the promise that the Canadian Government would buy 120 Tucano aircraft as part of the barter agreement. The procurement order held out by Spar as enticement—with the explanation that the Tucanos would replace the Canadian Air Force's fleet of 150 Tudor aircraft—was not guaranteed, however. Following a detailed survey under the title "Program for Extending the Service Life of the Tudors," the Canadian Department of National Defense concluded that the fleet would last beyond the year 2005.

It was Hughes which sounded the warning by leaking information it had obtained from the U.S. Embassy in Canada. In its counterattack, Spar divulged a legal opinion unfavorable to Hughes and, as recently as December, sent Telebras a letter asking that its competitor be disqualified for not meeting the requirement that there be a formal guarantee from the U.S. Government

concerning transfer of the technology for the U.S. satellite. Telebras turned down the request. The Indian wrestling was then replaced by insults. The manager of the Matra company, Reynad Da, called the U.S. satellite communications firms "imperialists." Raul Del Fiol, manager of Promon Engineering, the Brazilian firm working with Hughes, retaliated: "They are apprentices with no experience." Several news stories were "planted." "Spar has never won an international contract," they said. But last year, in partnership with Matra, it did win one in Spain. "Hughes doesn't know how to build satellites that combine the military X-band with the civilian C-band." But Hughes models of that type are in use in Mexico, Australia, and Japan.

Since March 1989, when the bids from both competitors were opened simultaneously, Spar and Hughes have plunged into an aggressive marketing campaign. Their zeal is justified. Experts say that the world satellite market has exactly 29 customers around the world and is now worth about $2 billion per year. This means that just the bidding for Brasilsat—which will give the winner a contract worth about $200 million—probably represents over 10 percent of total satellite sales.

It is the additional services that are at the root of all the intrigue. The problem is that Hughes stuck to what was specified in the call for bids, while Spar not only met those requirements but also offered built-in possibilities as being "marvels of the technological future," an example being mobile transmissions via satellite. The game has been further complicated by barter agreements. Everything has appeared. The consortiums have spared no efforts in this area. "We already have contractual commitments with Embraer stating that it will supply part of the satellite structure," says Andy Sztyk, the superintendent of Spar. Bradberry says: "Hughes is going to buy more than $100 million worth of services and computer programs alone from Promon."

That arsenal of offers is catching the attention of many people, and comments are coming from all directions. One of them, calling for competitive bidding to be managed by Telebras, which is supervised by the Ministry of Commerce, went too far. Stepping in with opinions were the Armed Forces General Staff, the National Institute of Space Research (INPE), the Ministry of Foreign Affairs, state-owned firms, and various domestic companies with an interest in the outcome, examples being Engetronica [expansion unknown] and Embraer itself. From the standpoint of the consortiums involved, winning the competitive bidding may mean getting a stamped passport to a dazzling future in other Latin American markets. And it is that expectation which is exacerbating a quarrel fueled by political ingredients, name-calling, and elbowing.

Spar's trump card is the useful life of its satellites: they will supposedly remain in space for 15 years. Hughes' trump card is price: it is charging less. Hence the shootout that has dragged on for months. At the same time, other candidates have jumped into a smaller fray

for the privilege of placing the satellites in orbit. Running in this race are the U.S. manufacturer McDonnell Douglas with its Delta rocket, China's China Great Wall Industry with its Long March rocket—it was disqualified right from the start for not meeting the specifications in the call for bids—and the European consortium Arianespace with its Ariane, which has always been the clear favorite from the technical and commercial standpoints. Although easier, the decision on a rocket is tied to the choice of satellite and, like the latter, is up in the air until the official decision is announced.

Standing in the cross fire with nothing to protect them are the experts at Telebras and Embratel, which are in charge of the bidding. The final report which they prepared not only gave the victory to the Ariane launch rocket but also concluded that the Hughes satellite was superior operationally as well as cheaper from the standpoint of a useful life of 12 years. According to the report, the bid by the U.S. firm was considered "preferable from the technical point of view," while Spar's bid was considered "acceptable" but "less efficient" and regarded as presenting a "greater risk." "Risk" refers to the chances for accurately launching the satellite and properly positioning it in space.

As far as price is concerned, the report, whose calculations include financing costs, says that the Hughes proposal will cost $404 million, compared to $508 million for Spar. That is a difference of $104 million, to which would be added the additional $26 million needed for launching the Spar (because of the size and weight of its satellites). This means that the total additional cost of the Spar would come to $130 million. Excluding the cost of launching and financing, the price of the two bids is reduced to $172 million (Hughes) and $255 million (Spar). The chairman of Victori International, Pierluigi d'Ecclesia, challenges the conclusions in the report. He has written a cover letter in which he says that Telebras did not take the discount fully into account. As a result of the financial gymnastics involved in his way of counting, the difference falls to a slim $26 million at present values, including expenses and the higher launch cost.

Taking place behind the controversy over the sale of second-generation telecommunications satellites to Brazil is another battle of similar proportions but one that is quieter than the commercial bombardment underway by the consortiums headed by Spar and Hughes. At stake in that parallel war is the transfer of technology for the Brazilian space program—a modest undertaking compared to what is being done by the big powers but one aimed at winning part of the international market for the production and launching of small scientific satellites. This is an area where Brazil would have advantages over the big powers. "We are working on a model similar to that of Embraer, which began with a very simple project called Bandeirante and is now flying higher," says Brigadier General Sergio Cerolla, director of the Aerospace Technology Center.

There is less noise surrounding the battle for technology transfer, but some serious pushing and shoving is going on. It involves strong diplomatic pressures and is stirring up research centers and high-tech industries in various countries. The main sticking point is the international embargo on the sale of equipment and technical know-how in the area of satellite launches. That embargo, sponsored by the U.S. Government, is honored by the Group of Seven, which consists of the most highly industrialized countries in the capitalist bloc. The Missile Technology Control Regime, an agreement signed in 1987, made the embargo even more restrictive and was a direct blow to the Brazilian space program. "Many things which we could have bought from other countries are having to be developed and manufactured here. This increases the cost and delays our projects," complains Brig Gen Cerolla, who has devoted his entire career to development of the aerospace industry.

The official argument used by the big powers to justify the embargo is that they want to prevent the proliferation of nuclear weapons and of vehicles that might be used to launch those weapons. Because it has not signed the Nuclear Non-Proliferation Treaty, Brazil is one of the countries chiefly targeted by that restriction. Another excuse is that countries with access to those technologies must be prevented from reexporting them to nations involved in wars or to East European countries.

"It is clear that they fear the military use of the rockets we are building as well as the reexportation of the technology we might obtain from them," admits Brigadier General Ajaz de Melo, deputy chairman of the Commission for the Establishment of Military Satellite Communications. "But the bigger problem is commercial: the fear that we may occupy areas controlled by their industries." And in that respect, the same stand is adopted by the Soviet Union, which does not make technological cooperation in this field easy. China has been the only exception: it is cooperating with the INPE on a joint program for the production of satellites that is more ambitious than the so-called Brazilian Complete Space Mission, which is the project being developed autonomously in Brazil.

It is that context which makes the process of acquiring the second-generation Brasilsat satellites seem like a golden opportunity for penetrating the technological blockade. "We cannot waste this chance to get what we need," says engineer Marcio Barbosa, the INPE's director general. With the experience of someone who has been involved in the effort to establish the aerospace industry in Brazil for two decades. Barbosa says that "this is a unique opportunity, and if we lose it now, it will be 10 years before we get another chance"—that is, when the bids go out for the third-generation Brasilsat.

Under the terms of the call for bids in connection with Brasilsat, technology transfer was required to be one of the forms of countertrade offered by suppliers, and it immediately became the most sensitive subject in the diplomatic area. Several manufacturers dropped out of the bidding at once because they knew that their governments would neither authorize the transfer of certain items nor support the related commercial countertrade. Among them were Ford Airspace of the United States and Aerospatiale [National Industrial Aerospace Company] of France. Hughes is only able to guarantee the purchase of Brazilian products because its controlling company, General Motors, has taken responsibility for increasing its imports from Brazil. The question is whether that increase was not already part of GM's future plans regardless of the satellite deal.

The U.S. competitors—McDonnell Douglas in the case of the rockets and Hughes in the case of the satellites—were authorized by their government to offer technology transfers with the proviso that the contractual commitments would subsequently have to be approved. In response to the Brazilian Government's expressed doubts regarding final approval by the Americans, Hughes sponsored a visit by Ambassador Harry Schulaudeman to Minister Antonio Carlos Magalhaes. The ambassador said he was confident that "the U.S. Government will guarantee technological assistance." Trade representative Carla Hill also got into the act, but she was as slippery in her comments as the ambassador. In a letter dated last June, she said that "it would be incorrect to conclude that Hughes would not be able to fulfill its obligations."

The U.S. Government seems to have had even less commitment to the proposal by Douglas, either because of the obvious advantages of the proposal by the European Arianespace consortium or because rocket technology is even more sensitive than that for telecommunications satellites. The Canadian-French satellite offered by the consortium headed by Spar also caused less of an uproar over the issue of technology transfer because in that respect, the governments of Canada and France are less hard-nosed than the United States.

The biggest fight over technology has concerned the U.S. Government's pressure on France to withdraw the transfer license granted to Arianespace. France is a signatory to the agreement of 1987, but feels that this transaction with Brazil does not violate that agreement. Last October, U.S. Vice President Dan Quayle warned that "if a company that has contracts with the United States enters into that type of cooperation, it will face strong action on the part of the U.S. Government." The message was understood, and the governments of the FRG, Great Britain, and Italy, which were also participating in Arianespace, dropped out. Only France stuck with the proposal.

The result is that only the know-how concerning the French components of the Ariane rocket might be offered to Brazil. In any case, Arianespace's proposal is similar to the one by Hughes of the United States. The contracts with Brazil will have to be approved after the fact by the French Government. Moroever, there is no

guarantee that despite government backing, Arianespace itself will not back out in the future if U.S. pressure on the firm grows unbearable.

In short, there are many "dark clouds" hanging over the future of Brazilian satellite telecommunications, and they reveal two dramatic circumstances within the country. First, the negligence of the authorities demonstrates that the current administration, which is now about to leave office, has been incapable of mediating various interests and pressures and achieving what is best for the country. By leaving the decision on the satellites for the incoming administration, it is evading its responsibilities and exposing society to risks that could be completely avoided if it had fully exercised its duty to govern. The second circumstance has to do with our technological limitations. When all is said and done, the use of space resources for our own benefit is still dependent upon decisions made elsewhere.

'Satellite War' in Brief

Technology: Hughes is offering a conventional "spinner"-type system. It claims that this satellite, which uses 50-percent less fuel for launching and signal transmission, is the one best suited to Brazil's needs. Spar is offering a triaxial system, considered the satellite of the 1990's. It is larger and can capture more energy and carry transmission channels. The bid committee chose the spinner-type satellite, considering it a "more efficient" model presenting "less risk."

Price: The Hughes satellite costs $172.4 million. The lead firm claims it charges lower prices because it has the technology for both satellites (spinner and triaxial). The Spar price is $225.9 million. The consortium headed by Spar claims that the total discount it offered, and which reduces the price to $198.4 million, was not taken into account. The committee feels that the most appropriate criterion is the "lowest equivalent annual cost" and has therefore decided in favor of Hughes.

Useful life: The Hughes satellite has a lifespan of more than 12 years. The consortium headed by Hughes says it is able to provide as many years of useful life as necessary to a maximum of 18, provided that the satellite carries more fuel. The lifespan of the Spar satellite is 15 years. Spar offered its satellite with a useful life of 15 years right from the start. In its evaluation, the committee disregarded the possibility of 15 years of useful life, feeling that a maximum lifespan of 12 years was sufficient.

From Alcantara to the Skies

The rocket launching base in Alcantara (Maranhao) will be officially inaugurated this month. That step will mark a milestone in the program known as the Brazilian Complete Space Mission (MECB), which has been under development since 1981. The final objective is to place four Brazilian-made scientific satellites in orbit using launch vehicles that have also been developed here.

The launch rocket, known as the VLS [Satellite Launch Vehicle], represents a further development of Sonda-IV, which has been undergoing tests since 1988. Development of the VLS is the responsibility of the Aerospace Technology Center, and over 100 firms in the country are now involved in the project. Although critical stages in its production have been mastered—an example being the production of a completely domestic solid fuel—the VLS is the segment of the mission that has suffered the greatest delay. The original timetable called for the first Brazilian satellite to be launched last year. The main reason for the delay has been the international embargo on technology. Current forecasts call for the first rocket in the series to be launched in mid-1992.

Satellite development and production and the related operations bases on the ground are the responsibility of the National Institute for Space Research (INPE), and dozens of firms are also involved in this program. The first two satellites will be used for data transmission; the others will be used for remote sensing. The first of the series will be ready in the middle of this year, and it may be launched by a rocket from another country if a decision is made not to wait for completion of the VLS.

MECB officials believe that the program has great commercial potential and feel that several countries may use Brazilian launch vehicles and even acquire small-sized satellites developed here. The most immediate commercial prospect is that the Alcantara base will be used by other countries. Thanks to the base's favorable location in relation to the equator, any launch from Alcantara will cost 30 percent less than a corresponding launch from Cape Kennedy, for example.

Interview With Minister Magalhaes

Minister of Communications Antonio Carlos Magalhaes is the key figure in the soap opera concerned with competitive bidding on the satellites and their launch vehicles. Breaking months of silence, the minister has decided to discuss the matter.

Question: There is widespread concern among the bidders and in the federal agencies involved in the bidding over the delay in choosing the winners and starting the second phase of the Brasilsat Program.

Megalhaes: I feel that the lobbying being engaged in by the firms in connection with this decision is normal and to be expected, but I can guarantee you that we still have plenty of time, and there are still doubts about the prices submitted, since they are higher than those on the international market. On the other hand, I consider it morally impossible not to hear the future administration's opinion concerning a bidding process that involves so many millions of dollars.

Question: On the subject of prices, analyses by Telebras have indicated that both the cost of the two launch vehicles and the cost of the satellite offered by Hughes are within the state-owned firm's budget.

Magalhaes: They are, but it is always possible to obtain a more reasonable price.

Question: Some businessmen involved in the bidding complain that you are trying to hold an auction and bending the rules laid down in the call for tenders.

Magalhaes: We must do anything that will reduce the price of the satellite. It was the duty of the bid committee to think about that.

Question: After a year of work by the committee, is it still impossible to evaluate those quarrels over prices and financing?

Magalhaes: That's right. We want to be as sure as possible that our decision will be in the best interest of the country.

Question: Experts in the sector believe that the threat of a bottleneck in satellite telecommunications is growing.

Magalhaes: No, there is no danger of that.

Question: And if it turns out that satellite services do collapse sometime in the future, who should take the blame?

Magalhaes: I made my decision based on the advice of experts at Telebras and Embratel. So they have already assumed responsibility for that additional time.

Question: There have recently been reports that the bid committee has already completed its expert report and drawn up a final technical report recommending the winning firms.

Magalhaes: I can say in all sincerity that that report does not exist, or if it does, I don't know anything about it because it has never come into my hands.

Question: And regarding the discussion you were going to have with the future administration of President Collor, have you done that yet?

Magalhaes: So far, it has not been possible to discuss the subject with any of them. We spoke to Deputy Renan Calheiros, and he told me that he was only taking care of administrative matters at the moment.

Question: But is it definite that you are going to wait to see what the next administration thinks and that you even prefer to let that new administration make a decision on the bids?

Magalhaes: If I make a hasty decision now, I will pay a very high price no matter which one I choose because there may even be legal consequences either way, and we will waste more time fighting the bidders in court. I would rather let the new administration decide than have people saying I took a bribe.

BANGLADESH

Reuter Opens Satellite Service in Dhaka

55500049 Dhaka THE NEW NATION
in English 25 Jan 90 p 3

[Text] Vice-President Moudud Ahmed on Monday said modern information technology should be adopted in management system for increasing production, reports BSS.

The Vice-President was addressing on Monday workshop on foreign exchange trade through rooftop satellite organised by Reuters at a local hotel.

State Minister for Finance Farooq Rashid Choudhury, and Governor of Bangladesh Bank SB Choudhury were present.

The workshop was addressed by Reuters Bureau Chief in Dhaka Atiqul Alam, South-East Asia Marketing Manager of Reuters Dannis Lim and Reuters Representative in Pakistan Javed Faroqi.

The workshop was attended by a galaxy of top ranking bankers from home and abroad.

Mr Moudud Ahmed said information was a vital key for development. He said everyday information technology had been assuming greater importance with the advancement of science and growing need of multi-sectoral socio-economic complex.

Although a poor nation combating hard for keeping pace with the development speed of other countries, specially the Third World countries, Bangladesh needs to adopt up-to-date technologies, he pointed out.

The Vice-President said Reuters was the oldest information agency of the world having credibility and popularity globally.

He said, the extension of Reuters services for foreign exchange trade through rooftop satellite to add greater impetus to the financial service of our country. He hoped that it would definitely help the banks here and boost their foreign exchange trade. They will know how the foreign exchange market is moving and they will feel themselves at par with any major bank in the world, he said.

Mr Moudud Ahmed said Bangladesh launched an allout campaign to boost its economy. The country is committed to stimulating its reserve. We have taken a big stride in expanding its industrial horizon. As stability is returning investors from abroad are taking great interests in the opportunities available. He said and added the outlook was much better than it was a few years ago and the extension of Reuters services was a testimony to it. We need to sustain it, he pointed out.

The Vice-President said Bangladesh wants a free press to flourish with objective analysis of socio-political and economic issues in an atmosphere of democratic piety. He said without a free press democracy and development could not grow healthy.

He stressed the need for free flow of information from developed world to developing world and vice-versa for reducing gap of understanding and bridging happy bonds of fraternity among the nations.

Afterwards Mr Moudud Ahmed formally launched the Reuters service of foreign exchange trade through rooftop satellite.

INDIA

71 Radio Stations To Be Commissioned in 1990

BK2303102090 Delhi Domestic Service
in English 0830 GMT 23 Mar 90

[Text] Seventy-one radio stations are likely to be completed during the next financial year. Forty television transmitters, including 18 high-powered ones, are to be commissioned during the same period. The information and broadcasting minister, Mr. P. Upendra, gave this information in a written reply in the Lok Sabha today. He said 19 program production centers will be set up and work will begin on nine high-powered transmitters during 1990-91.

At present, 100 All India Radio stations and 514 TV transmission centers are functioning in the country.

Science Congress Discusses Telecom Development

Approach to Rural Areas

55500050 Calcutta THE TELEGRAPH
in English 8 Feb 90 p 8

[Text] Cochin, Feb. 7 (UNI): Mr C.S. Subramanian, co-chairman of industrial coordination at the Institution of Electronics and Telecommunication Engineers, Delhi, today called for a realistic approach to the rural telecom projects in India.

Delivering a talk on "Rural telecom" at the Indian Science Congress here, he said while the government spent crores of rupees to obtain vital data on villages, it was a pity that it was not used to plan rural telecom projects.

Mr Subramanian said the per capita income of the rural sector was expected to increase to a level sufficient to generate demand for consumer durables and industrial outputs, thus achieving a healthy economy by AD 2000.

Telecom facility should be viewed as a "social objective" rather than an "essential infrastructure for growth," he said.

Mr Subramanian said the prevailing approach of considering all the 575,930 villages equally and working out a

plan to cover them all with one phone each in a phased manner over a period of 10 to 12 years had to be modified.

In this process, the active productive villages which constituted 70 per cent of the total would have to wait for a long time.

Farmers, fruit and vegetable growers, fishermen, village artisans and weavers need simple communication facilities to communicate with their outlets for the quick absorption of their produce to ensure steady and reasonable income.

He said "They just cannot wait for such a phased manner of telecom coverage."

He said for want of simple communication links these sectors would produce only less and the available excess workforce would migrate to the urban areas in search of jobs while the national goal is to generate gainful employment in rural areas.

Calling for a realistic approach for rural telecom facilities, Mr Subramanian, a former vice-president of the Institute of Electronics and Telecommunication Engineers, said the aim should be at starting from primary potential points of economic production and growth in rural areas and spread to the marketing centres, district and state headquarters making maximum use of the existing links.

He said a separate autonomous "rural telecom corporation" would be neither desirable nor necessary. Rural and urban telecom should coalesce into a national telecom network. There are several options in the present day technology to make this a cost effective programme, he added.

C-DoT Functioning

55500050 Madras THE HINDU
in English 8 Feb 90 p 4

[Text] Cochin, Feb. 7. Prominent Indian scientists have spoken out, praising the achievements of the Telecom Commission Chairman, Mr. Sam Pitroda, and the organisation he was instrumental in creating, C-DoT.

These testimonials assume importance in the wake of serious differences which have reportedly sprung up between the Union Communications Minister, Mr. K. P. Unnikrishnan and Mr. Pitroda. Further, a committee headed by the former Secretary to the Department of Electronics, Mr. K. P. P. Nambiar, is reviewing C-DoT's performance.

"Pitroda is a trained engineer. He is not a politician working as an engineer", said Prof. C. N. R. Rao, Director, Indian Institute of Science. Prof. Rao was chairing a session at the Science Congress today at which Mr. Pitroda gave a presentation on C-DoT.

Communications was as important as food, Prof. Rao said. It would be a different India when a person in

remote village could lift up a phone and speak to someone in a city, perhaps to summon a doctor.

"There is no doubt that what Mr. Pitroda and C-DoT have achieved is marvellous. I do not think anyone questions that," Prof. Rao said.

Delays in development were insignificant compared to developing the technology in India and saving millions of dollars in foreign exchange, Prof. Rao added.

The UGC Chairman and present general president of the Science Congress Association, Prof. Yash Pal was equally emphatic. Delays in development should not be over-emphasised, Prof. Yash Pal said during the question time at the same session.

When a project, which sought to lay the nucleus for a "new India", was being attempted it was essential to be supportive, even when being critical, he said. "Nitpicking" about delays would only kill off such attempts, Prof. Yash Pal added.

Mr. Pitroda said public accountability was one of the cornerstones of C-DoT. If there had been delays, "it is not because we goofed up" but because the Indian system had not been well understood, he said. There had been considerable delays in procuring many imported systems which were needed, including licensed software.

Mr. Pitroda drew attention to the superiority and advantages of the rural automatic exchange already developed by C-DoT.

Union Telecom Minister Meets With Calcutta Press

55500051 Calcutta THE STATESMAN
in English 15 Feb 90 p 9

[Excerpt] In pursuance of the Prime Minister's wish and the National Front Government's commitment, regional disparities are to end, the Union Minister for Telecommunications and Surface Transport, Mr K. P. Unnikrishnan, announced at a Press conference in Calcutta Press Club on Wednesday. Mr V. P. Singh had stressed the need to develop the Eastern and North-eastern regions and Calcutta, as the gateway, needed special attention, he added.

Calcutta—its appalling telephone system, potholed roads and resuscitation of the port—seemed to weigh on the Union Minister's mind. Wherever he went during his near-three-day stay in the city, he spoke of the woeful condition of these facilities and promised to usher in a new era. West Bengal, he felt, had been neglected by New Delhi for years together but the National Front would change all that for", under it, Calcutta would be transformed into a city of growth, promise and fulfilment", he said at the Press conference.

The pathetic state of the Calcutta Telephones seems to have bothered Mr Unnikrishnan the most. "I knew it was bad but my experience here convinced me that it is

the worst system operating in the country". The Union Minister announced the formation of a task force which would help upgrade the telecommunication system in the city within the year.

A series of promises included 100,000 new electronic telephone lines for Calcutta this year, a major transformation of the underground cable network "laid in the mid-1950s and which had by now mummified and was fit to enter the Guiness Book of Records", Mr Unnikrishnan said. By December 1990 Calcutta would have an international gateway telephone switch and an international satellite station. These facilities, to come up in Salt Lake, would cost the exchequer Rs 15 crores. Calcutta would no longer have to depend on Delhi and Bombay for international connexions.

The proposals drawn up were communicated to the Chief Minister during a two-hour meeting during the day. "Calcutta will get what it wants, even if I have to beg, borrow and steal, we will give it to you", he said at the Press conference.

The present backlog of the Calcutta Telephones was about 38,000 lines but that is because "many people have given up hope of ever getting a telephone connexion". He said old cables would be pulled out where necessary and new ones laid and material required for this transformation would be made available. He promised to look into the telephone set-up personally and give it highest priority "for without a modern communications system no industry could develop in the State". Calcutta will be built up for the development of the Eastern region because Orissa, Assam, Bihar and the North-east are dependent on Calcutta. "The city cannot be allowed to deteriorate any further", he added.

[Passages omitted]

IRAN

New Satellite Ground Stations in Khorasan Province

LD0104135190 Tehran Domestic Service in Persian 1030 GMT 1 Apr 90

[Text] According to the Central News Unit, on the anniversary of the establishment of the Islamic Republic of Iran, the town of Kahnuj was brought under the coverage of the second program of the Vision of the Islamic Republic of Iran today.

According to the same report, through the efforts of the personnel of Kermans Television and FM Transmitters repair and maintenance unit, a satellite ground station with a 10 watt capacity has been installed in the center of Kahnuj. The residents of the town and its surrounding villages can, beginning today, watch the second program of the Vision of the Islamic Republic of Iran on Channel 10.

We have a report about the commencement of operations of satellite ground stations in Khorasan Province, to which we draw your attention:

[Unidentified correspondent] Concurrent with the start of the new year [21 March] and the blessings of Islamic Republic Day, 1 April, six satellite ground stations for the Vision of the Islamic Republic of Iran officially went into operation in Khorasan Province. With the commencement of operations at the satellite ground stations, which had been working for some time on a trial basis, the towns of Tabas and Taybad and their surrounding regions have come under the coverage of the second program; over 20 villages in Khorasan Province have also come under the coverage of the Vision's first program. As a result, over 82,000 people can now benefit from the two programs of the Vision of the Islamic Republic of Iran in Khorasan Province.

The six satellite ground stations were installed and put into operation by the staff of Mashhad's television transmitters repair and maintenance unit, and part of its budget came from the province's credit allocation on the approval of the province's social council [shora-ye 'ejtema'i].

[Announcer] Central News Unit, Mashhad.

Three Satellite TV Stations Commissioned

LD0104185390 Tehran Domestic Service in Persian 1630 GMT 1 Apr 90

[Text] The satellite television station of the Islamic Republic of Iran's Network-2 became operational today in Marivan township. According to the Central News Unit, with this satellite station becoming operational, the inhabitants of Marivan and several villages nearby, can from now on receive the programs of Network-2 of the Vision of the Islamic Republic, on channel nine.

Also, with the installation and commissioning of the 10 watt power satellite station of the Divan-Darreh district which began today, the inhabitants of the Divan-Darreh districts and the surrounding villages can, from now on, receive the programs of Network-2 of the Vision of the Islamic Republic, on channel five.

Simultaneously with the Yawm Allah of 12th Farvardin [1 April, anniversary of the founding of the Islamic Republic], the 50 watt power television satellite station of Jolfa and Hadi-Shahr, in eastern Azerbaijan, was inaugurated and became operational. According to the Central News Unit, with this television transmitter becoming operational, the inhabitants of Jolf and Hadi-Shahr can now receive the programs of Network-2 of the Vision of the Islamic Republic of Iran, on channel five.

Satellite Ground Station Inaugurated Near Hamadan

LD0204131790 Tehran Domestic Service in Persian
1030 GMT 2 Apr 90

[Text] The Deh-Heydar satellite ground station has been inaugurated and will be used by 6,000 residents of the villages of Deh-Heydar, Gol-Heydar, and Rehaneh in the vicinity of Hamadan. According to the Central News Unit, the television ground station, which was put into operation by the Voice and Visions's television and FM transmitters repair and maintenance unit of Hamadan, will allow the residents of the villages to receive the first television program on channel 10.

SAUDI ARABIA

Electronics Firm's Military, Civilian Production Described

90OL0285A London AL-MAJALLAH
in Arabic 22 Jan 90 pp 40-43

[Article: "Electronics Company Begins Manufacturing Wireless Sets"]

[Text] During next April, the Saudi Ground Forces (Signal Corps) will be supplied with the first wireless sets of Saudi manufacture. Those sets will be the first nucleus of production by Advanced Electronics Ltd., a Saudi company with Saudi-foreign joint capital from the Saudi Arabian Airlines, the National Commercial Bank, the National Industrialization Company, and the Gulf Organization for Investment (50 percent), the Boeing Industrialization Technology Group (B.I.T.G.), a simple limited company composed of Westinghouse, I.T.T. [International Telephone and Telegraph Corporation], the United Support and Services Company, the Saudi al-'Amudi group, and Boeing (50 percent).

Dr. Samir Fayiz, the executive president of the company, explained that it is one of the economic equilibrium companies of the Peace Shield [Defense System] project, and its aim is to achieve self-sufficiency for the Kingdom of Saudi Arabia in the field of electronics for the various sectors, foremost among them the Ministry of Defence and [Civil] Aviation. [He said,] "We hope to expand in the future to cover the needs of the gulf and the Arab states." The company will manufacture and repair electronic equipment "of high quality and laudable cost through the use of mechanization and automation".

Technology Transfer

The economic equilibrium program concentrates especially on the process of technology transfer, which will be accomplished by several means in Advanced Electronics, according to its executive president, such as "the transfer of advanced technology information from the foreign companies participating through licensing and technical services agreements with other designated foreign companies," and the participation of qualified Saudi youths (and this is most important) in working side by side (with the aim of close contact) with the foreign experts, whom those companies will provide to gain first-rate technical experience and skills through those personnel.

Dr. Fayiz concentrates on the Saudi youths' continuing in the work "and pursuing the trade and gaining experience through the functional development program and active participation in production, fabrication, installation, assembly, and repair". An office for research and development will be set up in the company to work on improving and developing the products of the company and making modifications to them to correspond to local requirements.

2000 Job Opportunities

When the company expands production, the number of workers in it will reach approximately 2000 Saudi youths and others. But how will these Saudi youths be recruited? Dr. Fayiz answers that that will be done through announcements in the various media and contact with educational institutions such as the colleges, universities, technical institutes, and resorting to some government bodies, such as the Public Foundation for Technical Education and Vocational Training.

Regarding the qualifications which the company will seek in the youth who apply, "this will differ from one position to another." But most of the positions which will be available in the company in the future "have a technical imprint in the field of electronics" that "requires a good knowledge of electronics and proficiency in the English language, which will be the language of technology transfer in the first stages." As for leadership positions, "the selection process will concentrate on persons who have broad experience in the commercial and industrial fields."

The company is now accepting applications for employment which may reach it directly or through the office of the secretariat of the committee of economic equalibrium.

Training Program

Work in the field of electronics requires extreme precision, which is provided through the training which the Saudi youths applying to work in the company will receive. At the present time, four qualified Saudi youths are being trained in a program of maintaining radars in early warning aircraft (AWACS). The training will be done in a number of ways, says Dr. Fayiz, including "cooperation with the institutes and facilities of the Public Foundation for Technical Education and Vocational Training, which has shown its readiness to support the economic equilibrium program, and through the electronics institute which they are working on setting up in Riyadh." The training will also be done before they begin working in the company.

The foreign companies financing the technology transfer, such as the American Westinghouse Company

and the British Racal Company, will participate in the mission of training the Saudi youths, "and the training program will be conducted inside the Kingdom in a concentrated form and abroad in the form of short courses." This is in addition to the technical agreements which the company will conclude in the future with some foreign companies specializing in the field of training and raising the level of the Saudi technicians and developing their competence in their fields of work.

$380 Million Annual Sales

The production of wireless sets for military uses is the first stage of production only. "The company will be able to produce developed electronic equipment which will respond to distinct needs in the Middle East and other world markets." The company will devote much of its attention "to providing integrated support, inasmuch as it will respond in a spontaneous way to requests for testing and repair services, training, spare parts, provisioning, and technical services."

Dr. Fayiz expects that the total annual sales of the company will reach $380 million and that its production will extend to the gulf states and elsewhere.

The company's executive president summarizes the division of the market into:

1) Communications equipment (the manufacture of tactical and secure radio sets and the application of communications systems.)

2) The development and integration of electronic systems (the definition and development of the systems and the application of the systems)

3) Supporting the electronic products (reworking—testing and repair, technical services, the aging of the equipment.)

The capital of Advanced Electronics Ltd., which is abbreviated in the economic equilibrium program to the name "Electronics", is 630 million Saudi riyals (about $170 million.) The partners have paid a quarter of this amount. The rest of the capital will be covered through loans from the Saudi commercial banks (50 percent) and the Saudi Industrial Development Fund.

[Box, p 42] Advanced Electronics Ltd. Main headquarters: Riyadh.
Branches: None.
The company's capital: 630 million Saudi riyals
Capital paid: 157.50 million riyals (25 percent of the capital).
Commercial activity: Advanced Electronics Ltd. will produce advanced electronic sets and equipment with accessories and requisites, in addition to testing and repairing electronic sets and equipment, including navigational equipment for aircraft. It will also offer integrated support in its field and will guarantee the supply of spare parts, technical services, system engineering, training, technical publications, etc., in the following fields: 1) Wireless communications equipment, military and civilian, with various accessories and requisites.
2) Secure communications equipment with accessories and requisites.
3) Earth stations for satellites with their accessories and requisites.
4) Mobile bases for communications.
5) Whole commercial communications systems.
6) Various radar sets complete with their accessories.
7) Spare parts for electronic equipment.
8) Support for the electronic industries (reworking/testing and repairing electronic circuit boards).
9) Developing and integrating electronic sustems.
10) Repair, technical services, engineering, training, etc.

The company will interact with: the Ministry of Defence and [Civil] Aviation, the Interior Ministry, the National Guard, the Ministry of Post, Telephone, and Telegraph, the large industrial companies, and the civilian services companies.

The shareholders in the company: 1) The National Commercial Bank (Saudi), a 10 percent share.
2) Saudi Arabian Airlines (Saudi), a 10 percent share.
3) The National Industrialization Company (Saudi), a 15 percent share.
4) The Gulf Investment Company (Gulf participation), a 15 percent share.
5) B.I.T.G. (American), a 50 percent share

The Board of Directors: 'Adnan al-Dabbagh, chairman of the board
Members: Ahmad Salih (National Commercial Bank), Dr. Farid Hamid (National Industrial Company), Dr. Fu'ad Sinan (the Gulf Organization for Development), and George Zabukrtsky, Ronald Glover, and Ray Rizr from the Boeing Group.
Executive President: Dr. Samir Fayiz.

TASS Signs Extensive Communications Deal With U.S. Companies

90WT0061A Moscow TASS in English
1902 GMT 13 Mar 90

[Article by TASS correspondent Vladimir Kikilo]

[Text] Moscow, 13 Mar (TASS)—The Soviet News Agency TASS will be able to use a privately owned global communications network to exchange dispatches with its bureaus inside the country and abroad, following the signing of an agreement with the U.S. companies Contel and Vertex here today.

Under the agreement, Vertex will provide the TASS headquarters in Moscow with two ground stations, comprising two 11-meter antennas and high-frequency amplification equipment.

The project will give TASS access to two Intelsat satellites, above the Indian and Atlantic Oceans, which cover practically two-thirds of the globe.

Contel will provide TASS with special equipment to transmit its services via the global satellite communications network. The equipment will comprise ground reception-and-transmission and reception antennas (stations).

As a result, the Soviet News Agency will be able to use a privately owned communications network, like the other leading world agencies—Reuter, UPI and AP.

In addition to Soviet territory, the network will cover South and a large part of North America, Europe, Africa and Asia (including Japan).

The new system will enable TASS subscribers to receive textual, facsimile, photo and voice information with a speed of 9.6 kbits per second—10 times as high as the teletype system.

Hundreds of TASS bureaus inside the country and abroad will be able to send information direct to Moscow round the clock, irrespective of weather or other conditions.

Tim Scholz, a Contel top executive, described the agreement as a "first step to be hopefully followed by many other steps."

He expressed satisfaction with the conclusion of the deal with one of the leading world agencies, which he attributed largely to the USSR's policy of glasnost.

"Contel regards the deal as a major step both from the political and financial viewpoint," Scholz added.

EUROPEAN AFFAIRS

Spain-Portugal Fiber Optic Link by 1992

90WT0050A Lisbon DIARIO DE NOTICIAS
in Portuguese 13 Feb 90 p 19

[Text] By the end of the first half of this year, the telephones in Portugal and Spain will be linked by a digitalized network, and by the beginning of 1992, there will be a fiber-optic cable link, according to a protocol signed between the two communications companies.

The PTT [General Administration of the Postal, Telephone, and Telegraph Services] and the National Telephone Company of Spain (CTNE) signed an agreement on the seventh of this month calling for the installation of a fiber-optic cable between Elvas and Badajoz. It is to be put into service in 1992.

This agreement, together with the digitalization of the networks later this year, "means a revolution in telephone communications between the two countries designed to meet the demand and to improve quality and security," Cristobal Torres, director of the CTNE, said.

The telephone systems in the two countries are currently linked only by two analogic Hertzian-band networks serving the peninsula and connecting Portugal with the Canary Islands.

The existing technical difficulties are attributed to problems in the domestic networks of each country, which are due to the increase in the demand for lines and the traffic volume.

The two companies "are in constant touch and have excellent technical relations with a view to the development of projects and improvement of the quality of communications," the CTNE official said.

The outgoing traffic from Spain to Portugal increased by 20.4 percent last year, and the predictions for this year suggest that there may be an increase of about 25 percent.

Portugal is ninth on the list of countries receiving telephone calls from Spain, in order of decreasing volume. It is followed by Japan, which was the country with the largest increase, 33 percent. Traffic in the direction of France was up 14 percent, that with the United States 18 percent, and that with the FRG 11.7 percent.

Cristobal Torres, international networks director for the CTNE, said in Lusa that in order to deal with this new situation with Portugal and to improve communications, the telephone companies in both countries "have been working for three years on projects to modernize the networks, which will lead to an improvement in service quality."

For example, a digitalized network is being installed between Caracteres and Sao Mamede. It will be in operation by the end of the first half of this year, probably as early as May. Work on the digitalized network which is to be installed between Seville and Alcara Rubia (in Alentejo) has been suspended for four months, pending the announcement of the results of the studies which are to be made to establish whether the fiber-optic cable which will link Elvas with Badajoz and Badajoz with Seville will prove adequate.

Mobile Phone Mass Market Potential Analyzed

90WT0051A West Berlin WOCHENBERICHT-DIW
in German 25 Jan 90 pp 47-51

[Article by Juergen Mueller: "European Mobile Telephone Improves Telecommunications Services"—first paragraph is WOCHENBERICHT-DIW introduction]

[Text] The importance of the mobile telephone is growing. Key elements responsible for this are new technologies, new forms of sales, and increasing competition. With the assistance of the EC Commission, a uniform European standard has been created for the next generation of equipment which will permit greater price reductions and could transform the mobile phone from a specialized service into a mass service. Implementing this concept is, however, fraught with a multitude of problems that are described here. The role of the mobile telephone in the impending structural changes in the telecommunications market is analyzed.

The mobile telephone expands the scope of the traditional telecommunications service by increasing the range of coverage. Considerable expenditures are required for this qualitative leap forward in telecommunications, however[1], such as considerably more expensive terminal devices and a complicated network technology, but the growth in demand in the Scandinavian countries, in Great Britain, and in the United States indicates that a considerable market potential will exist as potential technological progress is made at the EC level. In order to more rapidly open up these markets, other suppliers besides the traditional telecommunications companies should be licensed.

Second-source suppliers have already been allowed in Great Britain, the United States, Sweden, and France. In the Federal Republic as well, a license has been granted to a consortium headed by Mannesmann. Releasing this long-term lucrative market from German Telekom's public service monopoly has awakened the interest of private industry—as the formation of various consortia[2] and intense competition for licenses in other countries have shown.[3]

The Mobile Phone: an Important Telecommunications Market

As a substitute for, and complement of, fixed-network telecommunications, mobile radio has a long tradition. Radio services for personal paging or for taxi dispatching and marine use are known for the diversity of ways in

which they can be employed. Their expansion was limited by high acquisition and operation costs, as well as low quality (e.g. no interchange with the next transmission area) and the shortage of usable frequencies. The technical development of microelectronics in the field of telecommunications considerably improved the quality of mobile radio services, however, and partially eliminated the problem of frequency shortages.[4]

With cellular technology—which had been developed as early as 1947 and had seen its first commercial applications in the 1970's[5]—the area to be served is divided up into individual cells. The radio frequencies in nonadjacent cells can be reused, thus getting around the problem of a shortage of frequencies. Since the problem of handing off the conversation from one cell to another has been solved, the number of cells can be greatly increased by reducing the cell radius without restricting the user's freedom of movement, thus permitting mobile telephone systems to be employed to pretty much blanket an area. The EC expects 15 to 16 million users of the European ditigal mobile network[6] in the year 2000. Thus, on the average for Europe as a whole, almost five percent of the populace could be reached by mobile phone. This would undoubtedly be a portion of the populace which would make particularly frequent use of telecommunications, so that for the medium term, the major share of telecommunications traffic would be carried via mobile telephone.

Mobile Telephone as a Step Toward Carrier Competition?

The German Federal Postal Administration was operating the analog C-Net with approximately 123,000 subscribers as of mid-1989 as a monopoly. For the digital mobile telephone network that is to go into operation in 1992 (covering all areas by 1994), an additional license (for the D-2 network) was issued to the Mannesmann consortium over and above Telekom's license (for the D-1 network). Customers can thus choose between Telekom and a private operator for mobile telephone service. In order for the D-2 network to be competitive, however, it needs equal rules for accessing the terrestrial telephone network.

Calls made on mobile telephones are fed into the traditional network at a number of radio exchanges[7], and calls made on the fixed telephone network are brought into the mobile network via these exchanges as well. Since the base stations and radio exchanges of the D-2 network are privately operated, the possibility of potential carrier competition exists when these radio exchanges are independently connected to each other via a fiberoptic network. But even without this step, the opening up of mobile telephone service to private companies, which has come about as a result of Federal Postal Administration reform, represents an important step in the opening up of the traditional telecommunications network monopoly.

The Role of the European Commission

Developments in the Federal Republic must be seen against the background of the efforts undertaken by the EC Commission with a view toward 1992.[8] In addition to increased standardization on the equipment market, efforts are under way at the same time to effect an opening up of the procurement market. The goals established at the EC Ministerial Council session of 25 June 1987 with regard to digital mobile telephones are:

—To fully exploit the technical possibilities in the development of the second generation of mobile telephones;

—To create a Europe-wide mobile telephone system; and

—For international traffic, to eliminate the current incompatibility of national systems.[9]

These kinds of standardization efforts to attain the advantages of large market share volumes, and particularly to fully exploit the potential of the European domestic market, are to be applauded, but the implementation of this policy and the detailed formulation of standardization for the 900-MHz system in the time remaining are very problematical.[10] The following can be considered to be advantages for the manufacturing side of things:

—Reduction of research and development expenditures (avoidance of parallel research) in developing digital mobile phone systems;[11] and

—Attainment of large market share volumes in system production through the exploitation of a uniform, standardized European domestic market.

For mobile phone customers, the advantages lie in the opportunity of using the equipment for international calls, but particularly in lower costs when the large market share volume and cost advantages are passed on by the supplier side. These advantages cannot be fully realized, however, because:

—The European manufacturing consortia—if only for reasons of entrepreneurial strategy—cannot refrain entirely from their own research in this area;

—The creation of a European standard makes the adoption of non-European standards and existing non-European product and production expertise more difficult.[12] Opposed to the advantages of specialization, which stimulates trade, are barriers to market access, which restrict trade and can dampen market dynamics if procurement policy does not afford non-European consortia—that is, suppliers—full parity with regard to market access;

—Establishing a single European changeover date implies that the conversion of the present systems is not being carried out for purely economic—that is, business management—considerations. Profitable analog mobile phone systems may possibly be precipitously replaced by digital systems; and

—A certain degree of skepticism with regard to the euphoria expressed about the possibilities of a uniform technology for international traffic is appropriate. If one proceeds on the assumption that 80 percent of the mobile telephones will continue to be used in private automobiles, then the expectations regarding the market potential for international communications are not supported by the available statistics and traffic projections. Most business and service-call trips (95 percent)—primarily where mobile phone applications are foreseen—are local. Even for long-distance trips (about 40 percent of all passenger km driven), movements across national borders account for only two percent. That will probably not change in the medium term.

The EC Commission's activities, therefore, by no means take the place of national efforts. They have accelerated the efforts at standardization, however, and have at least produced the necessary "comparative competition" among the various systems. The EC's efforts on behalf of a coordinated appropriation of frequencies for the 900-MHz service represent important support for the development of a European mobile telephone system.

The Regulatory Framework

The development of a European mobile telephone system will also be determined in the medium term by the basic regulatory conditions under which the service and equipment providers must work. The most important factors are:

—Management of the radio frequency spectrum;

—Licensing and regulation of additional suppliers; and

—Industrial policy criteria for the granting of licenses to applicants and for incorporating international standardization regulations.

The efficiency of frequency spectrum management is of fundamental importance because the growth potential of mobile telephone systems is primarily dependent upon the available spectrum. The smaller the spectrum that is made available, the greater will be the development and investment expenditures for a more efficient exploitation of scarce resources, and the more expensive the service will be.[13]

By licensing an additional network operator in the mobile telephone area, the scarce frequency resource is reduced even more (by eight to 15 percent)[14] since every operator must set aside his own reserve capacity. In addition, uncertainty is increased for investors when a number of competitors are licensed. On the other hand, the particularly rapid development of the market in Great Britain and the United States demonstrates that the practical application of technical progress takes place at such a rapid pace under competitive conditions that the dynamic productivity effects may more than make up for the static disadvantages of the additional frequency demand.

The decision to allow only one additional competitor means that the optimal sizes of operational entities are not being determined by the market, but are administratively established without knowing much about potential market developments. Surely there are advantages of size which the national and multinational enterprises and consortia can exploit, but, with stardardized access regulations and uniform technical systems, there are certainly opportunities for regional enterprises as well.[15] The decision to permit only a second, national provider artificially limits this potential.

Despite the issuing of licenses to national second-source providers, small and medium-sized companies can also get into the act in the case of mobile telephones, as developments in Great Britain show. There, mobile telephone companies were forbidden to sell frequencies (on-air time) and equipment directly to the customers— rather, they had to get middlemen involved who installed the equipment and handled the monthly charges. While on the one hand this does entail greater coordination costs that must be handled via the market and not within the company, on the other hand it creates considerable potentional for experimentation and, above all, excellent opportunities for interested companies.

Because mobile phone licenses are very lucrative in view of expected market potential, the way in which second-source licenses are granted is an open question in this entire debate.[16] One option is the so-called "beauty contest" in which a suitable applicant is selected according to a variety of criteria.[17] Because such decisions are arbitrary to a cetain degree, a system of issuing second-source licenses by regional lottery has been instituted in the United States. This can result in further mergers since strong companies buy up other licensees. For this reason an auction procedure—preferably at the regional level—should be instituted from the very beginning. The investments in the "beauty contest" (DM150-200 million) would be considerably reduced through the low costs of an auction and at the same time the monopoly revenues would flow directly to the government treasury by way of the auction.

The efficiency of competition in the mobile telephone field is, of course, determined to a very great extent by the access and transmission arrangements between the competitors and the traditional telecommunications network. In Great Britain the negotiation of private contracts was allowed in these cases with the opportunity of having the regulatory authority OFTEL (Office of Telecommunications) arbitrate in instances of disputes.[18]

A nationally oriented licensing policy, such as is still practiced in some European countries, becomes impossible with the licensing of a second competitor in the mobile telephone field. If a manufacturer has to support domestic industry in the procurement process, then he will have a competitive disadvantage in relation to a competitor who can invite bids on a worldwide scale. Industrial policy goals can therefore only be achieved by direct financial incentives—such as research and development

subsidies—or by uniform standardization and licensing requirements. Not only the creation of a European standard, but the founding of a European Institute for Standardization indicate that industrial policy goals will tend to be of secondary importance. The interests of an EC-wide standard to exploit internal market potential are paramount in this case.

These considerations show that regulatory decisions can greatly affect market volumes, prices, and productivity. Low equipment costs and rates are not to be expected until the market has achieved a certain volume. It must be the function of regulation to prevent monopolistic behavior and to stimulate market growth as much as possible.

Mobile Telephone Systems in Europe (June 1989)

	Subscribers (in 1,000's)	Density (per 1,000 persons)	Technology	System Capacity* (in 1,000's)
Great Britain	650	11.5	(E)TACS 900	1,400
Sweden	295	35.2	NMT 450/900	500
Norway	16	38.4	NMT 450	350
France	136	2.5	Radiocom 2000	160
Finland	131	27.4	NMT 450/900	250
West Germany	123	2	C-Net	600
Denmark	112	21.7	NMT 450/900	300
Switzerland	51	8.6	NMT 900	180
Italy	46	0.8	RTMS	100
Austria	44	5.8	NMT 450	50
Netherlands	43	3	ATFZ	50
Belgium	21	2.1	Mobilo 2	50
Spain	21	0.5	NMT	60
Ireland	8	2.2	(E)TACS	12
Iceland	7	30.3	NMT 450	12
Portugal	1	0.1	C-Net	notavailable

* Maximum number of subscribers

Sources: Institut de l'Audiovisuel et des Telecommunications en Europe; P.A. Management Consultants

Summary

A glance at the table shows the various stages of development of mobile telephone systems in the individual West European countries. Meanwhile, the Scandinavian countries have achieved a density of mobile telephone coverage that illustrates the Europe-wide potential of this market. Through relatively favorable basic regulatory conditions, Great Britain partially made up for lost time by bringing about the rapid acceptance of a non-European technology and generously allocating radio frequencies. Cost reductions which make terminal equipment and charges more attractive for larger segments of the populace became possible because of larger market volume. The question now arises as to whether, after agreement has been achieved on a standard European technology for the generation of equipment to be used in digital mobile telephones, the other European countries can similarly exploit this market potential without reverting to national industrial policy considerations. That things were not always done according to this maxim—and particularly in developing the present system—is shown by the slow expansion of the market in France, Belgium, and in the Federal Republic of Germany.

The rapidity with which basic regulatory conditions are changed is also very important. In the United States, 15 years were required for this, while the Swedish administration made decisions very rapidly, and thus more time remained for practical market testing. How important the market testing phase is for just such a dynamic product as the mobile telephone is illustrated by the competitive advantages that are enjoyed today by the Scandinavian telecommunications administration and equipment industry.

Footnotes

1. Investment in the infrastructure of such networks is quite in line with investments for traditional telecommunications systems in the local area network. At present, about 700 pounds per subscriber is invested in Great Britain, and in the United States investment is running about $1,800 per subscriber (Smith, New Court: Racal, London 1988, p. 36). With the conversion of current analog systems into digital mobile telephone systems, these costs will probably continue to go down. By way of comparison, the cost of a connection to the local area network (from the exchange to the subscriber, including terminal device) is currently running about

DM2,000. Of course, the investment in terminal equipment and the recurring costs of mobile telephones are still considerably higher, but they will probably continue to fall in the medium term based on expanded market volume, thus resulting in increased replacement of fixed-wire telecommunications networks.

2. List of consortia: MAN AG with Ameritech, Bell Atlantic, Hoesch AG, ADAC, and others; D-Tel with BMW AG, Racal Telecom Public Limited Company, Bell South Enterprises, Incorporated, Veba AG, and others; Mannesmann Mobilfunk GmbH with Pacific Telesis, Cable and Wireless Public Limited Company, Deutscher Genossenschaftsbank, and Lyonnaise des Eaux; MobiTel with NTE NeuTech Entwicklungsgesellschaft, Bavarian Mortgage and Exchange Bank AG, Bayernwerk AG, Cellular Communications, Ing. C. Oliveti & Company, Shearson Lehmann Hutton, Axel Springer Verlag AG, and others; Deutsche Mobilfunk AG with Comvik International GmbH, Millcom GmbH, Southwestern Bell International, PT Beteiligungsgesellschaft des Mittelstandes, and others; Private Mobilfunk GmbH with Daimler-Benz AG, British Telecommunications, NYNEX Mobile Communications Company, RWE AG, and Bayerischer Vereinsbank; DeTel with ALLGON AB, BERLINER ELEKTRO AG, Contel Cellular Gundlach & Suelter AG, Schneider AG, and others; Harpener AG with GTE (Stamford); Celtel with Salzgitter AG, Deutscher Shell AG, McCaw Cellular, and others; and The A. Peitz Company (Munich).

3. Thus, for example, in addition to British Telecom, Televerket, and others, most regional American telecommunications companies (such as Nynex, Bell Atlantic, Bell South, and others) were represented in consortia; however, the traditional telecommunications companies are also trying to achieve a strong position in these markets by way of cooperative arrangements and international activities.

4. Cf. ECTO, Analysis of Second Generation Market, Brussels, July 1985.

5. The first cellular system was introduced in Chicago in 1978; commercial implementation in the Japanese network began in 1979 and in the Scandinavian network in 1981.

6. P.A.: The Pan European Cellular Communications Market up to the Year 2000, Evaluation for the EC Commission, Brussels 1988.

7. In late 1988 the English mobile telephone provider VODAFON was able to reach 90 percent of the English populace via five central exchanges. The West German Federal Postal Administration originally planned on eight exchanges for C-Net, but 23 are now planned because network capacity is to be considerably expanded.

8. Cf. The European Domestic Market in Telecommunications, WOCHENBERICHT 29/88.

9. The European Conference of Postal and Telecommunications Administrations (ECPT) has been working on the introduction of a uniform standard for cellular services since 1982.

10. The call for tenders for a Europe-wide digital mobile telephone system, published in the official gazette of 5 January 1988, and the establishment of the European Standards Institute for Telecommunications Equipment, are the first specific steps in this direction.

11. The ECR-900 Consortium (European Cellular Radio 900) alone—composed of Alcatel, AEG, and Noika—is counting on research and development expenditures of DM300 million.

12. One reason for the rapid development in Great Britain was, for example, the direct adoption of the American TACS [not further expanded] technology.

13. In comparison with the situation in Great Britain and in the United States, there is still no awareness in the Federal Republic of Germany of the national economic importance of the scarce resource that is the radio frequency spectrum. Above all, political decisionmaking mechanisms for undertaking a periodic review of existing frequency distribution from the point of view of finding alternative and more efficient allocation methods, have not yet been established. Cf. ECTO, Market Requirements for Radio Spectrum, Report for the EC Commission, Brussels 1988.

14. But only two to five percent for the new generation of digital systems.

15. So far, West Germany, Sweden, Great Britain, and France have restricted themselves to two national carriers, while, at least in individual regions of the United States, numerous competitors have been allowed.

16. The market value of a D-2 license is estimated at DM2-4 billion. Cf. TIMES of 8 December 1989, p 12.

17. This was the procedure adopted in West Germany, Great Britain, France, Hong Kong, and Sweden.

18. Since the competitors usually come from the traditional telecommunications field, such a regulatory authority is unavoidable.

CANADA

Spar Constructing Satellite System for Sierra Leone

55200030A Toronto THE TORONTO STAR in English 27 Feb 90 p C13

[Text] A new satellite communications system designed by Spar Aerospace Ltd. is gaining acceptance in Africa.

The Mississauga-based company said construction is under way on a $7.7 (U.S.) million system to be provided

by its Satellite and Communications Systems division for the West African state of Sierra Leone.

The earth station project features Spar's 15-meter antenna which matches revised standards approved by the International Telecommunications Satellite Organization (Intelsat), Spar said.

"Previously, Intelsat station antennas were more than twice this size, but similar new generation Spar-supplied earth stations have gone into successful operation in Liberia, Mozambique and Zambia within the last year," said Hillar Kurlents, Spar's manager of international marketing.

Bell Canada To Install Telephone Equipment in Morocco

55200027A Toronto THE GLOBE AND MAIL
in English 20 Feb 90 p B24

[Article by Lawrence Surtees]

[Text] Bell Canada International Inc. of Ottawa has received a third contract, valued at $155-million, from Morocco to provide and install telephone switching equipment.

The contract is also good news for Northern Telecom Ltd. of Mississauga, which will manufacture the switching equipment used to route telephone calls to and from subscribers. Both BCI and Northern Telecom are units of Montreal-based BCE Inc.

BCI obtained two other contracts from the Moroccan telephone administration, the Office Nationale des Posts et Telecommunications (ONPTT), in September, 1988.

Those contracts, worth $125-million, were to install 130,000 telephone lines in Casablanca and Rabat, and to manage the supervision and training of Moroccan telephone administration employees, said John Simpson, a BCI spokesman.

The new contract is for the installation of an additional 156,000 telephone lines in Casablanca, Rabat and a number of smaller towns and to install a sophisticated international gateway switch to update the country's access to global communication networks, Ian Morris, a spokesman with Northern Telecom Europe PLC in Maidenhead, Britain, said in a telephone interview yesterday.

"Obviously we are very pleased with the contract and there are further negotiations for a joint venture, which would follow Northern Telecom's pattern and strategy to increase our global trade," Mr. Morris said.

Northern is managing its contribution to the contract from its European headquarters. So far, more than 40,000 lines have been installed ahead of schedule, Mr. Morris said.

The Moroccan contracts are part of a government program to update the country's antiquated telecommunications network.

The computerized switches installed by Northern not only double the capacity of older equipment, but make a wide variety of new communications services, such as data network services for communication between computers, possible.

BCI also announced yesterday it is currently negotiating a fourth contract with ONPTT to provide a further 70,000 telephone lines in Casablanca, Marrakesh and Agadir.

If successful, that contract would bring the total value of BCI's work in Morocco to more than $400-million.

But BCI is also proposing to build a $25-million factory in Morocco to make the computerized switches there in a joint venture between ONPTT and Northern Telecom.

Such a venture would allow Northern to assault other markets in North Africa, Mr. Morris said. "Morocco also wants such a venture to not only create more jobs, but to export telecommunications equipment to other countries in the region."

Northern Telecom has several manufacturing joint ventures elsewhere in the world, primarily in Europe, but created its first joint venture in Turkey with Netas in 1967.

BCI currently has 70 managers stationed in Morocco and will add 20 more employees under the new contract. BCI usually borrows staff under contract from Bell.

Halifax-Vancouver Fiber Optic Network in Operation

55200034A Vancouver THE SUN
in English 14 Mar 90 p D4

[Article by David Smith: "B.C. Tel Lights up With Link of Optics"]

[Excerpts] Prime Minister Brian Mulroney's husky voice came through crystal clear Tuesday on the 7,000-kilometre Lightguide Transmission System, as the world's longest fibre-optic communication network was officially launched.

Mulroney, flanked by Telecom Canada president James Farrell in Ottawa, spoke to Premier Bill Vander Zalm and B. C. Tel chairman Gordon MacFarlane in Vancouver and telephone company and political representatives in Halifax after the "last splice" in the cable was made in Vancouver.

The first splice took place in Atlantic Canada 30 months ago. The first call, an interactive video conference, began Tuesday at 10:35 a.m. Vancouver time.

The LTS, as it is called in B. C., cost Telecom Canada about $750 million and five years to construct. It promises business users clearer and cheaper digitized transmissions of voice, data and video services. [Passage omitted.]

While B. C. Tel staff celebrated the completion of their $116-million leg of the Telecom system, the significance of fibre technology was noted by Ted Hird, president of a Vancouver telecommunications consulting firm. [Passage omitted.]

While offering virtually unlimited capacity (a single fibre pair of the eight pairs reserved for trans-Canada traffic is capable of carrying half of Telecom's current traffic), fibre has one weakness, said Hird.

"The problem is something called 'back hoe failure'. They dig it up during construction although B. C. Tel has taken exceptional steps, such as marking the line with red tape, to reduce the chance of this happening."

Additionally, he said, a $35 million contract was signed with Telesat Canada to provide satellite channels as a backup system.

The LTS stretches from B. C. Tel's downtown switching centre on Seymour to Halifax and was built by the major Canadian phone companies which comprise Telecom Canada.

The network is expected to extend to Newfoundland and P. E. I. at a later date.

The B. C. portion of the network, built by B. C. Tel eight months ahead of schedule, runs 800 kilometres from Vancouver to the Alberta border.

Many smaller communities along the LTS route in B. C. can tap into the system since the network in B. C. has national and intra-provincial capacity.

Northern Telecom, Kennecom Join Projects To Supply Hungary

Digital Switching Equipment
55200029 Ottawa THE OTTAWA CITIZEN in English 24 Feb 90 p F7

[Text] Toronto (CP)—Northern Telecom, which is hungry for expansion, is embarking on a joint venture with two European companies to supply telecommunications to Hungary.

The company has teamed with BHG Telecommunication of Budapest and Austria Telecommunication to build and supply digital switching equipment to the eastern European country. The joint venture will begin operating July 1 and will be based in Budapest.

The new company will supply both the growing Hungarian national telecommunications network and private business customers, Northern Telecom said.

"The agreement demonstrates Northern Telecom's commitment to serve the whole of Europe, supplying... both established and newly emerging national markets," said Pat Hogan, group vice-president of Northern Telecom Europe.

Northern Telecom had 1989 revenues of $6.1 billion and net earnings of $376.5 million.

Cable Television Systems
55200029 Toronto THE TORONTO STAR in English 27 Feb 90 p C13

[Text] Kennecom Inc. of Markham and its partners have agreed to link up with U.S.-based Chase Enterprises to own and operate cable television systems in Hungary.

Kennecom said the operations will be conducted through its 25.5 per cent-owned Hungarian cable-TV company, Kabel TV KFT. Its partner, Chase enterprises has entered into a $1.04 billion cable-TV joint venture in Poland.

Sea Link Chosen To Provide Telesat Mobile Service
55200032A Toronto THE TORONTO STAR in English 27 Feb 90 p C13

[Text] Telesat Mobile Inc., Canada's domestic mobile satellite operator, has chosen Newfoundland-based Sea Link as an authorized service provider of Telesat's satellite communications services across the country.

"Now every mobile target within the satellite coverage area can be tracked and monitored in real time," Derrick Rowe, Sea Link's president, said in an announcement. "Enforcement to protect our fishery resources, tracking of toxic waste movement, and improved safety of life at sea are all enhanced through mobile satellite services."

Ottawa Undecided How to Privatize Interest in Telesat
55200025 Toronto THE GLOBE AND MAIL in English 22 Feb 90 p B20

[Article by Lawrence Surtees]

[Text] Although the federal government has declared its intention to sell its stake in Telesat Canada, Ottawa has yet to determine how it will privatize the domestic satellite communications carrier.

Finance Minister Michael Wilson declared in his annual budget speech on Tuesday that: "We intend to sell the government's shares in Telesat Canada, which has not achieved commercial success as a satellite communications carrier."

However, Mr Wilson offered no other details as to the timing, rules or conditions that will govern the sale of its three million shares in Telesat.

Telesat has no idea either how Ottawa plans to proceed with the sale.

"The announcement is no surprise to us, but we do not know any further details and have not yet had any discussions with privatization officials," Fred Bartlett, Telesat vice-president of finance and administration, said yesterday.

The federal government jointly owns Telesat, along with Canada's largest telephone companies and independent telecommunications carriers, which, collectively, own 50 per cent of the monopoly satellite carrier. Of those 16 companies, Bell Canada, the utility arm of Montreal-based BCE Inc., owns the biggest chunk—almost 1.5 million shares, or 25 per cent.

However, Ottawa owns half the company minus two shares. As innocuous as those two shares seem, in comparison with the sic million shares outstanding, they represent the federal government's commitment, since Telesat was created in 1969, to sell shares in the company to the general public.

That promise was made by Eric Kierans, then communications minister, and the federal government enshrined that promise in Telesat's Act of incorporation when it set aside the two shares to be held in the name of the general public—one each to be voted by the chairman of the board and the president of Telesat.

Telesat officials and industry experts have for two decades pointed to those two special shares as indicating a commitment of the federal government to sell shares on the public equity market to the general public when a privatization decision is made.

Such a sale would require a legislative amendment to the Telesat Canada Act, Mr Bartlett said. Ottawa's willingness to proceed with privatization was underscored earlier this year when it approved the first sale of Telesat stock to employees. The 200,000 shares are being sold at book value of $34 each and would give employees as much as a 3.2 per cent stake in Telesat when the final details are worked out at year- end.

The timing of a public sale would likely depend on favorable market conditions and on the financial health of Telesat, Eldon Thompson, president of Telesat, has said consistently. In making his announcement, Mr Wilson in effect declared that the government believes that Telesat is now financially strong enough to sever its financial ties with Ottawa.

Alternatively, the federal government could opt to sell its entire stake to a deep-pocket bidder, as in the case of its sale of Teleglobe Canada, the international communications carrier, to Memotec Data Inc. of Montreal. Or it could do both, bringing in a new partner and selling a share issue to the public.

Deciding how to proceed rests with John McDermid, Minister of State for Privatization and Regulatory Affairs, but "no further decisions have been made yet," a spokesman for Mr McDermid said yesterday.

But several issues have to be considered if Ottawa opts for soliciting bids for its stake, which is currently appraised of carrying a stated value of $30-million.

The first issue relates to Telesat's monopoly status and to the as-yet unannounced federal telecommunications policy. The second issue also relates to the current share-holder relationships. If, for example, Ottawa were to receive bids from any of the current shareholders, it would have to consider the issues related to changing the balance of the share structure.

Without a major shareholding of its own, a valid question remains whether the current shareholders can all still work together. Canadian Pacific Ltd., which owns 225,000 shares, also owns almost 60 per cent of CP Telecommunications Inc., which plans to compete against Bell Canada in the long-distance market.

While few parties have declared publicly their intent or desire to bid for shares if made available, Teleglobe Canada president Jean-Claude Delorme told THE GLOBE AND MAIL last August he would be very interested in acquiring Ottawa's Telesat stake. Teleglobe Canada Inc. is also one- third owned by BCE, Bell's corporate parent.

Telesat had profit of $18.5-million on revenue of $120-million in 1988,. the last year for which results are available. Mr Thompson said the best time for a public offering would be by early next year, before its $600-million worth of new satellites, the Anik E family, become operational.

Although Telesat's business is both cyclical and capital intensive, because of the need to construct and launch new satellites every five to six years, it is doubtful that Ottawa would plow its proceeds from the privatization back to Telesat. Mr Thompson has previously stated that Telesat would have to be self-financing when it is privatized.

CRTC Decision Opens Competition in Business Phone Market

55200028 Toronto THE GLOBE AND MAIL
in English 2 Mar 90 p B4

[Article by Lawrence Surtees]

[Text] The CRTC has relaxed its rules on resale and sharing of telecommunications services in a decision it says opens the business telecommunications market to more competition.

The decision, released yesterday, on the resale of business telephone services is a major victory for tiny resellers, such as Call-Net Telecommunications Ltd. of Toronto, but a significant defeat for the monopoly long-distance telecommunication carriers, including Bell Canada.

And it lays to rest a five-year battle between Call-Net and Bell—the utility arm of Montreal-based BCE Inc.

Although the decision upholds current restrictions forbidding the resale or competition in the phone companies' public long-distance market, it makes significant changes for small business users.

Industry watchers and players had considered the resale debate to be a barometer of how the Canadian Radio-Television and Telecommunications Commission may respond to the forthcoming proceeding on long-distance competition.

Judging from yesterday's decision, the federal regulator may be receptive to more change.

Under the new CRTC rules, resale companies will be able to rent private business voice and data lines from Bell, British Columbia Telephone Co., CP Telecommunications and Telesat Canada to resell a variety of competitive voice and data services to business users.

The decision also includes a major change for business users, allowing them to lease circuits between major cities and to jointly use the communication lines with other users.

"The joint-use provision is the most significant change in the new rules and will allow users with significant traffic to build and share their own custom networks," said Angus Oliver, director of economic and regulatory analysis at the CRTC.

Previous rules did not allow the resale of private, voice-line services, which are distinct from public long-distance services because they cannot be used by the general public to bypass the telephone company's monopoly long-distance network.

However, resale of private-voice services will allow small business users to design custom networks with more flexibility than previously allowed.

"The commission believes that relaxing the rules for resale and sharing will result in a number of benefits, mainly for smaller users, including increased choice, innovation and lower prices," Keith Spicer, CRTC chairman, said in a statement accompanying the decision.

The decision is also a critical boost for Call-Net, which had been leading the battle against the telephone companies for greater competition.

Although the CRTC had on several occasions found Call-Net had been violating the previous restrictions, the company had gained several reprieves from the federal Cabinet, extending the period it could remain in business.

"Our decision legitimizes some of their services," Mr Oliver said.

The rules are only three pages long, but accompany a 60-page decision the CRTC issued under a proceeding it began more than a year ago to clarify its rules.

Bell officials had expected the decision would uphold current restrictions forbidding resellers from leasing Bell's private-business, long-distance services.

Bell officials said last month that the company would likely appeal any decision that did not go its way.

The resale market in Canada is small, compared with what is commonly called the "bypass" market in the United States.

But the stakes are potentially high for telephone companies throughout Canada because resale allows millions of customers to develop alternative private networks that will likely result in some erosion of the telephone companies' monopoly long-distance business.

In its decision, the CRTC said it rejected waiting for the forthcoming long-distance hearing because of the further delay that would cause, particularly surrounding Call-Net.

"While the commission is of the view that resale for joint use would result in the provision of some services that would be substitutes for (long-distance), it can be argued that all private-line services are, to some extent, lower-priced substitutes," the CRTC decision states.

"That's exactly what we had been arguing and wanted the commission to see," Charles Dalfen, Call-Net's Ottawa-based telecommunications lawyer, said in an interview.

Apart from giving the resellers most of what they asked for, the decision also rejects Bell's position on some crucial economic issues that may also have an impact on that future proceeding.

The CRTC rejected Bell's economic assessment of how much money it would lose if the rules were relaxed, arguing the telephone company forecasts were inflated.

The commission supported Call-Net's position that Bell would lose only about 2 percent of its long-distance market share in five years, or $100-million a year.

The CRTC said resale customers will have to pay a monthly fee of $200 per inter-city circuit to make up the amount that Bell would lose in its long-distance subsidy to its monthly local service.

But the commission found the impact of greater competition in the resale market would be substantially less on Bell's subsidy because of reductions to long-distance rates, which have stimulated demand.

CYPRUS

New Telecommunications Network Planned

NC2403093590 Nicosia CYPRUS MAIL
in English 24 Mar 90 p 14

[Text] The fast evolution of computer and processing technologies together with substantial reductions in cost have resulted in a steadily increasing demand for data processing and for the exchange of information between data users.

Cyprus has been no exception and the last few years have witnessed a rapid pace of computer proliferation with a rising demand for data communication.

Up until now, the Cyprus Telecommunications Authority [CYTA] was offering two alternative data communication services depending on their specific needs and volume of traffic.

The first service is the transmission of data over the Public Switched telephone Network (PSTN) both in Cyprus and overseas. It enables a subscriber, suitably equipped with the necessary data circuit terminating equipment (modem) to access a similarly equipped computer or data terminal anywhere in the world.

This service caters to the needs of mainly occasional users with small volumes of traffic that do not justify the leasing of dedicated point to point data lines.

The second data communication service offered by CYTA is the provision of point-to-point leased circuits. This service covers the needs of users who have large volumes of traffic to fixed destinations in Cyprus or abroad. The use of private leased circuits is under the direct control of the subscriber and available for exclusive use 24 hours a day.

The increasing importance of data communication and the new higher demands on service and reliability have created the need for the introduction of a dedicated data network as the existing services were relying on networks that were not designed to carry data.

As a result, CYTA is introducing in April CYTAPAC. CYTAPAC is a dedicated data network which allows the exchange of data between subscribers utilising a new revolutionary principle of operation called Packet Switching, which constitutes the latest development in the field of data communication.

With Packet Switching, a call is divided into a number of "data packets" with the address of the addressee attached to these packets. While the conversation is in progress, CYTAPAC stores information about the route to the addressee i.e. there is an imaginary path between the calling and called parties. Since each data packet carries an unambiguous address, several calls (i.e. data packets to and from various subscribers) can be dispatched over a given line.

The CYTAPAC network has been designed and installed according to the international standards and recommendations laid down by the International Telecommunication Union and offers the capability of interconnection with the Public Switched Telephone and Telex Networks of the authority, as well as the Public Data Networks of other countries.

The network includes the Packet Switching Exchanges (Nodes) which will be operational, at the initial stage, in all cities of free Cyprus as well as Paralimni. Subscribers will be able to access CYTAPAC from all parts of Cyprus.

To be able to access CYTAPAC, prospective subscribers must have the appropriate terminal equipment which can be obtained from private sector suppliers. Before selecting their terminal equipment, prospective CYTAPAC subscribers must ensure that their chosen equipment is fully compatible with the technical specifications laid down for connection to the network and also approved by the Authority.

Terminal equipment comprises:
a) The MODEM (DCE: Data Circuit terminating Equipment) and
b) The "terminal" (DTE: Data Terminal Equipment) which can be a synchronous packet mode terminal or an asynchronous character mode terminal.

CYTAPAC subscribers can access the service in one of the following ways:
a) Direct Access

The terminal equipment is directly connected with the Packet Switching Exchange (Node) via a dedicated data line. The point of connection at the Packet Switching Exchange is called "Port" and there is one such port allocated for each individual direct access subscriber.

The protocols used are X.25 for synchronous and X.28 for asynchronous communication.
b) Via the Public Switched Telephone Network (PSTN)

Terminals may access CYTAPAC via the Authority's Public Switched Telephone Network (PSTN) using a normal telephone connection. In order for this to be possible the subscriber must be allocated a specific NUI (Network User Identification), a kind of personal identity code. Both synchronous and asychronous character terminals may access CYTAPAC via the PSTN using CCITT X.32 and X.28 protocols respectively.
c) Via the Telex Network

WEST EUROPE

Telex subscribers are also able to access CYTAPAC via the Authority's Telex Network, again through the use of an allocated NUI.

CYTAPAC offers a host of advantages over traditional methods of data communication. Using sophisticated switching technology and advanced protocols, transparent to the user, it ensures that data remains unaffected by falsification and duplication.

FINLAND

Direct Long-Distance Connections to Soviet Karelia

*90WR0101B Helsinki HELSINGIN SANOMAT
in Finnish 2 Feb 90 p 5*

[Article: "Soon Direct Telephone Connections to Karelia"]

[Text] Perhaps as early as next summer it will be possible to make a telephone call from Northern Karelia to Soviet Karelia and from there to Finland. PTL [Post and Telecommunications Office]-Tele will study in the near future whether radio connections can be established quickly from the Tohmajarvi radio relay tower south of Joensuu to the Sortavala tower. The distance is 60 kilometers. If the connection is successful, it will already be of service for the final concert in Sortavala of the Joensuu Song Festival next summer. The new joint ventures Enocell Oy and Ladenso Oy need direct telephone connections. Now calls to Soviet Karelia have to be booked through Moscow.

Direct Telephone Long-Distance Connection to Murmansk

*90WR0101C Helsinki HELSINGIN SANOMAT
in Finnish 23 Feb 90 p 9*

[Article: "Direct Telephone Connection From Finland to Kola Peninsula"]

[Text] Direct telephone connections between Finland and the Kola Peninsula were opened on Thursday. In addition to the lines to Kola, there are connections to Moscow, Leningrad, and Tallinn.

The new telephone connection makes air traffic between Rovaniemi and Murmansk possible. The first flight to Murmansk will take place about the first day of summer.

Using the new lines, one can call from Finland only to the Kola region, but people on the Kola Peninsula can be connected through to anywhere in Finland. Persons living in Lapland can dial 027 to book a call.

The line can be used by others, too, but then the Rovaniemi area code 960 must be added in front of the booking number. A call costs 4.30 markkas per minute.

One of the manual lines built by Tele is used for flight verification, the other for telephone calls. The new lines cut the waiting time for calls to a few minutes.

Agency Orders GSM Mobile Phone System

*90WR0101A Helsinki HELSINGIN SANOMAT
in Finnish 8 Feb 90 p 12*

[Article: "Ericsson First GSM Network Supplier. New Mobile Telephone Network Will Start Up in 1991"]

[Text] Suomen Tele has ordered the equipment for the first stage of the European mobile telephone network from two manufacturers. The first exchange and part of the base stations are being purchased from Oy LM Ericsson Ab, and the final base stations from the English Orbitel Mobile Communications, Limited.

The value of the order is about 100 million markkas. To cover the greater part of Finland, the GSM system will require 10 exchanges and links and power stations to support them, so that, at the present cost level, the price of the GSM system will be over a billion markkas.

General Director Pekka Vennamo emphasizes that the order for the first phase does not bind Tele's hands further. "Equipment manufacturers will again compete for future deliveries." Work on developing equipment suitable for the GSM system is going ahead at top speed, so that apparently the cost of the equipment will also fall perceptibly in the next few years.

The first Tele GSM exchange will begin operation in Helsinki in July 1991. According to Tele's estimate, the general European mobile telephone network will reach a commercially significant scope in 1994-95.

GSM is a joint project of the telecommunications directorates of the Scandinavian and West European countries, which had its start as an initiative of the Nordic countries and the Netherlands. The GSM system will be digital and is being developed on the basis of common European standards.

In the initial stage, the system will operate among the West European capitals and their airports. In 1993 the system will be expanded to the larger cities, and in 1995 the GSM mobile telephone network will include the most important business channels of Western Europe.

The private Radiolinja Oy, behind which are local telephone systems and private companies, also wants into the GSM mobile telephone markets. Radiolinja has agreed with Nokia on equipment deliveries conforming to GSM standards. An obstacle to the start-up of Radiolinja's operation, however, has been the license application, which has become hung up in the Ministry of Communications.

FRANCE

Joint USSR Radio Broadcast Venture Planned

AU1203162690 Paris AFP in English
1531 GMT 12 Mar 90

[Text] Paris, March 12 (AFP)—A private French radio station is to broadcast in French to the Soviet Union for five hours a day under a new agreement with Radio Moscow.

Herve Bourges, president of Radio Nostalgie, announced the deal here Monday [12 March]. The agreement will take effect in May and is to last 15 years, he said. It was signed by Alexander Plevako, vice- president of Gosteleradio of the Soviet Union, and Mr. Bourges. Radio Nostalgie's programmes will be broadcast in French, but the Soviet partners will be allowed to insert Russian advertisements and news bulletins.

The programmes, re-transmitted by Radio Moscow, are expected to reach up to 20 million listeners in a 1,000-kilometre (600-mile) radius of Moscow. Radio Nostalgie is investing some 2.2 million French francs (392,000 dollars) in the scheme, and expects to set up a joint venture with Radio Moscow next year.

Ariane Space Launches To Resume in Summer

AU0904152890 Paris AFP in English
1456 GMT 9 Apr 90

[Text] Evry, France, April 9 (AFP)—European Ariane space launches, suspended six week ago after a rocket blew up shortly after take-off, are to resume this summer, Arianespace chairman Frederic Allest said here Monday. Mr. Allest told a news conference in this Parisian suburb that flights would resume "during the summer", at a date likely to be announced in late April or early May.

Two Japanese satellites were destroyed when Ariane-4, which was carrying them exploded on February 23. Mr. Allest said a commission of enquiry found the disaster was caused by "thrust failure in one of the four Viking-V engines in the first stage" due to "an almost total obstruction of a water circuit in the engine which occurred six seconds after take-off". The engine itself had not malfunctioned, he said, adding that the problem was probably caused by a foreign body in the system. Another problem, a hydrogen peroxide leak in one of the four booster rockets, caused a fire to break out, but the commission had not established any link between the two incidents, he said.

The loss during Ariane's 36th flight cost Arianespace between 35 and 52.6 million dollars.

However a week later the European consortium was picked to launch two U.S. satellites by 1993, bringing its total orders to 34, worth 2.5 billion dollars.

Ariane Failure Caused by Rag Left in Rocket

AU1304075290 Paris AFP in English
0743 GMT 13 Apr 90

[Text] Paris, April 13 (AFP)—A piece of cloth left in a rocket brought down the last Ariane space flight, which was to have put two Japanese satellites into orbit, wasting hundreds of millions of dollars, the European Space Agency admitted.

Ariane exploded dramatically in the night sky off Guyana just seconds after launch on February 23. It was to have put aloft an NHK television satellite and a Superbird B satellite for Satellite Communications Corporation worth a total of 430 million dollars.

The cloth blocked water supplies to one of the first first stage rocket engines, the agency said Thursday disclosing the findings of an inquiry.

Divers had recovered parts of the Viking-V D engine of the Guyana coast. "A piece of cloth obstructed the valve," the agency said.

The European Space Agency commercialises the Ariane European rocket. Tighter controls were to be introduced to prevent the recurrence of such problems.

The 37th Ariane flight was expected to take place during the summer as the inquiry had not called into question the design of the Ariane-4 launcher.

Europe 2 To Help First Czech Private Radio

AU1903201490 Paris AFP in English
1823 GMT 19 Mar 90

[Excerpt] Paris March 19 (AFP)—[passage omitted] France's private Europe 2 radio station announced here that it will launch Czechoslovakia's first private radio station in cooperation with the country's state-run radio Tuesday [20 March]. The name of the new station will be "Europa plus Prague".

Competition Increases Among Pay TV Companies

90WT0046A Paris L'USINE NOUVELLE
in French 1 Feb 90 p 29

[Article by Jean-Pierre Jolivet: "Large-Scale Maneuvers in Pay TV"]

[Text] **France Telecom will be able to join those operators who want a place in the pay-TV market. Something to worry Canal Plus, the pioneer.**

France Telecom is presenting its Visiopass system for broadcasting pay television programs. Next week the government will give the go-ahead to an overhaul of cable regulations, which will allow France Telecom to form partnerships with other operators.

For everyone, from France Telecom to Generale des eaux, including Lyonnaise des eaux and Caisse des depots, this is the opportunity to find a place in the pay television market.

It is time for large-scale maneuvers. Cable subscriptions doubled in 1989, reaching a total of 243,000. France Telecom made extra efforts to win operators over to its side. To share the commercial risks and further reduce costs, France Telecom is ready to enlist partners.

But above all, France Telecom is no longer concealing its wish to strengthen its role, with the deliberate motive of eventually positioning itself as a pay- TV operator. The purpose of the Visiopass System is to obtain a return on the 3.3 billion francs France Telecom invests annually in the cable plan. France Telecom wants to furnish the operators the infrastructure that will allow them to enter into pay TV, with the delivery of the first RPIC decoders (from Philips), the installation of encoder-scramblers (furnished by Matra Communication) permitting the transmission of images in D2 Mac on cable, and the placing in service of a management system for access licenses under Sema. This is an investment of one billion francs. "Visiopass is one way to make the cable networks profitable," says Dominique Lamiche, in charge of promoting France Telecom's image in the service of telecommunications.

This is a language to which the cable operators are paying particular attention. They are in a hurry to get out of the red, especially after having made major investments (four billion francs by Caisse des depots and Generale des eaux, 800 million by Lyonnaise des eaux). This language appealed to the managers at Lyonnaise des eaux, whose network infrastructure is almost completely provided by France Telecom.

The other two principal network operators, while favoring deregulation of their industry, are understandably taking a less categorical position. ComDev, a subsidiary of Caisse des depots, owns half of the equipment serving its 409,000 service connections, whereas Generale des eaux intends to keep several irons in the fire. It is already associated with Canal Plus in managing the Planete news service and holds 49

of the capital of Tonna, purchased last November by Andre Rousselet. A position which cannot help making Canal Plus happy. The encrypted channel is reaching a certain saturation level, with 2.8 million subscribers, and is seeking new opportunities.

"We are looking at an association with our natural partners and stockholders, Generale des eaux and Lyonnaise," states Bruno Delecour, Canal Plus marketing manager. This would facilitate the first steps of the encrypted channel into cable television, via its subsidiary Visicable Plus, since the battle for pay television will be waged on cable.

An Abundance of Candidates

Principal Operators in the Pay-TV Market

Operators	Subscribers	Service Connections*
Generale des eaux	82,400	825,000
Caisse des depots	64,500	340,000
Lyonnaise des eaux	55,000	620,000
Tours(Generale des eaux/Lyonnaise)	4,700	11,400
Bordeaux Plus (Generale des eaux/Lyonnaise/Caisse des depots	2,900	46,500
Cable networks of France (Belgian interests)	2400	15000
Cite Cable	2,100	10,400
France Telecom	1,300	1,500
EdF/TdF	610	2,400
Regional Communications Societies (Farm Bureau)	230	5,700
Various public systems (government funded)	18,600	34,000
Canal Plus	2,800,000	—

[Note] Since subscriptions have really taken off in the last few months, operators see in pay TV a means to gain a return on their heavy investments.

* Offering at least fifteen channels—Source: Agence Cable

Greece

Coastal Radar System To Be Installed

NC0304150390 Nicosia O FILELEVTHEROS in Greek 1 Apr 90 p 32

[Text] The government has made a preliminary decision to install a strong radar system that will cover all southern coastal areas of Cyprus with a large radius (up to 50 maritime miles). According to the specifications and technical-economic study that O FILELEVTHEROS has acquired:

—Four radar stations will be installed in an equal number of areas from Paphos to Famagusta.

—It will be possible to spot all types of vessels (even very small boats) and objects flying at very low levels.

The four radar stations will be installed in the areas of Lara (in Akamas), Pissouri, (Kremmoi) (west of Limassol), and Phano (in Protaras, toward Cape Greco). The central station where the reports will be automatically transmitted will be built in Nicosia. The "operations center" will be located in the central station. Police will control the "operations center" and issue orders from it.

A special conference was held this past week in the foreign minister's office on this issue, which is considered and being promoted as "very urgent." Decisions were made.

The reason the issue is considered so urgent is that:

—Despite efforts by the security authorities the free areas are not covered in many places. Crossings take place, or even worse smugglers, illegal immigrants, or others approach and infiltrate the coast. Such incidents have been spotted but not in time, thus endangering Cyprus' security.

Basically, the problem is that smugglers and terrorists use Cyprus as an easy area [evkolos khoros] and station!

The relevant technical study and specifications provide for the northern coast with additional stations of the same system, if the Cyprus problem is solved.

Communications System With Albania Announced

*NC2103175290 Athens ATHENS NEWS
in English 21 Mar 90 p 3*

[Text] Greece and Albanian telecommunication authorities have announced the opening of a new cordless radioelectric communications system linking Greece with Albania and Italy.

The new system will make possible automatic phone communication between Athens and Tirana.

SPAIN

SATCOM-MATRA To Build Spanish HISPASAT Satellites

*90CW0136A Paris AFP SCIENCES
in French 25 Jan 90 p 18*

[Text] Madrid—On 23 January in Madrid, the French company Matra, leading firm of the Satcom consortium and Spain, signed the final contract for the construction of the first Spanish communications satellite system, HISPASAT, agreeing on a price of 25 billion pesetas ($227 million).

This communications system will comprise two multi-purpose communications satellites (for telecommunications, data transfer and television) placed in orbit for military and civilian use, to which a third satellite will be added in segments. The two satellites will be launched by Arianespace Ariane 4 rockets.

The contract was awarded on 30 June of last year to the Satcom consortium (composed of the French Matra Espace, the Dutch Fokker and the British British Aerospace), which was favored over the Franco-German Eurosatellit (the German MBB, and the French Alcatel and Aerospatiale) and the American Hughes Aircraft.

The first satellite will be launched on 1 July 1992 and the second four months later, according to the Spanish Minister of Transport and Telecommunications, Mr. Jose Barrionuevo, who presided at the signing of the contract. The Matra delegation was led by its president, Mr. Jean-Luc Lagardere.

The HISPASAT system will have 16 channels available which mainly will enable the top three private Spanish television networks to be received throughout the Spanish territory. The "America mission" of the HISPASAT system will allow the broadcasting of two television channels in Spanish over the entire American continent, from the United States to Chile, added the minister.

The HISPASAT program provides industrial offsets for Spain amounting to 20 billion pesetas, which will come about through the indirect participation of Spanish enterprises in the Spanish program or other European programs.

The Ariane launcher will put the two HISPASAT system communications satellites into orbit. Arianespace's application was favored over that of the American firm General Dynamics.

According to Mr. Jean-Luc Lagadere, the contract signed on 23 January will create a "common bond in high technology between Matra and the most advanced Spanish firms." According to him, the HISPASAT systems is presently the most advanced.

UNITED KINGDOM

British Optical Network Presented

*90AN0136 Amsterdam COMPUTABLE
in Dutch 8 Dec 89 p 5*

[Text] The British Government has allocated about 16 million Dutch guilders to a glass fiber cable experiment in Bishops Stortford, Hertfordshire. The experiment involves the testing of a number of carriers for telephone, radio, and TV signals and value-added services in 500 sites, both private houses and companies. The experiment is conducted by British Telecom. The initial stage, called the "Telephony Passive Optical Network" (TPON), will involve only voice and low-speed data transmission. Three elements will be tested: the street-based trunk cables, the single inlets into some 140 houses, and the supply from two to five "incoming lines" to companies. The glass fiber network will have a structure. In a later stage, TPON will be upgraded into the "Broadband Passive Optical Network" (BPON), which will also carry TV signals, radio, and video information services. In addition to this, a star structure called Broadband Integrated Distributed Star" will be tested. BIDS will be equipped with electronic switching facilities and offer the same services. The experiment, for which British Telecom obtained a special license, will run until 31 December 1992.

Memo Signed for Creation of European Message System

55500044 London THE DAILY TELEGRAPH
in English 25 Jan 90 p 7

[Article by Christine McGourty]

[Text] Businessmen will be able to use pagers to relay messages throughout Europe by 1992 under a scheme launched yesterday.

Six of Britain's paging operators signed a memorandum of understanding with representatives of 14 other countries in West Europe to co-ordinate standards and create European Messaging System (ERMES).

A recent European Commission directive instructed the clearing of designated radio frequencies to accommodate ERMES. But because new frequencies will be used, new pagers will need to be manufactured.

Other operators are expected to sign up later and discussions are also under way to include East European countries.

The network would be a great help for business, said Mr Eric Forth, Minister for Telecommunications. "After 1992 the need for businessmen to travel will be even greater than it is now.

"They will want even more mobile communications services to help them to stay in contact with colleagues, suppliers and clients. With ERMES, the European businessman will be able to be contacted by his base in markets as far apart as Sweden, Spain and Turkey."

A pilot system called Euro-message, involving Britain, France, West Germany and Italy, will start later this year.

It will be superseded by ERMES, which will cover more countries and allow the development of new types of paging services, said Mr Dennis Woods, director of customer services for British Telecom's paging systems.

On ERMES, the paging system would operate at four times the speed of current networks. This could lead to extra services such as broadcasting news, share prices and sending longer amounts of text, he said.

There are almost two million people using pagers in Europe. In Britain there are 650,000 users and the market is growing at more than 20 percent a year.

Rapid Growth in Mobile Telephone Systems Anticipated

90WT0053a Frankfurt/Main FRANKFURTER
ZEITUNG/BLICK DURCH DIE WIRTSCHAFT
in German 27 Feb 90 p 8

[Article: Great Britain the Leader in CT2 and PCN Technology; Two Cellular Telephone Systems Dominate in Europe]

[Text] The European market for mobile communication increased in 1989 by about a third to a volume of nearly ECU 6 billion (ECU 1 corresponds to DM 2). According to estimates of the London research institute Communications and Information Technology Research (CIT), the branch will expand rapidly in the coming years as well: sales should reach ECU 8 billion in 1991 and ECU 10 billion by 1993.

The mobile communications industry is dominated at present by analog cellular telephones, but also includes the traditional mobile radio and "paging" devices. In Great Britain, the most dynamic market in Europe, new public systems with cordless telephones ("Telepoint") recently went into operation, and a trial run with digital "Personal Communication Networks" (PCN) is already planned for 1991.

Studies by CIT have shown that 2.2 million mobile telephones have already been installed in Europe. New units were purchased in the last year for more than ECU 1.8 billion, and revenues of telecommunications firms have risen in this area to ECU 2 billion. CIT sees a clear pattern of development: The transition from private radio systems to public networks has come about in Europe, and the next step will be the introduction of personal communication systems, although numerous technical, regulatory and commercial questions are still unresolved in this area. Two systems dominate the European cellular telephone market: In Great Britain the two providers Cellnet and Vodafone form the Tacs system used by 800,000 subscribers, while the NMT system (NMT-450 and NMT-900), developed in Scandinavia and since then set up in seven other countries, has about a million participants.

Market penetration is highest in Scandinavia (on the average 25 mobile telephones per 1000 inhabitants) while in the Federal Republic of Germany and France large distribution has not yet been achieved (only 2 sets per 1000 residents). The British market has developed very far, accounting for more than half of all mobileTh)-Ttelephones within the European Community. Although Great Britain, with fewer than 10 per thousand, has not yet attained the penetration rate of the Scandinavian countries, this market still seems to be developing the fastest, as the high growth rates show. In the United States the quota lies under 10 per thousand as well.The fact that Great Britain's mobile telephone system market is further developed than most other countries' is related to the Thatcher government's policy of promoting competition in this area and breaking the quasi)monopoly of British Telecom.

The existing mobile cellular telephones from Cellnet and Vodafone, which work by analog technique, are linked to the normal telephone network by radio connections in the 900 megahertz frequency band via base stations with an effective radius of at most 25 kilometers; for many reasons, they are not able to permit a larger part of the population to enjoy mobile or cordless telephones.

In particular, technical capacity restraints limit the number of possible subscribers in Great Britain to about 2 million. In individual regions, especially in the greater London area, bottlenecks have already appeared. An increase in the number of users will allow the Telepoint System, with its second generation "cordless telephones" (CT2), to let callers in central localities, for example in department stores or train stations, connect with the public network.

All together there are four different providers, whose products are not compatible with each other until the introduction of a "common air interface", CAI: Pioneer of the system was Ferranti ("Zonephone"). The consortium formed by British Telecom, STC, the French telephone system and Nynex ("Phonepoint") is a strong force; the only competitor of British Telecom in wired telephone communications, Mercury Communications, has joined with Motorola and Shaye. And Philips has formed a group with Barclays Bank and Shell.

The British government has taken an additional leap with licensing for PCN systems. In order not to provoke another controversy over standards in Europe, it refrained from committing itself to the technology to be employed when announcing licensees. Only the basic concept is clearly defined: It should be a truly mobile, universal communication system with high transmission quality and low cost.

In particular, it is still undecided whether Dect or GSM, the paneuropean standards for digital cellular telephones worked out by the telephone companies and authorities, will be chosen as the technical standard. The British consortia seem to prefer GSM, since it is more precisely defined than Dect. Still unresolved is whether PCN will be a replica of the analog cellular service with relatively large cell radii and frequencies in the range of 1.7 to 1.9 megahertz, or whether it is possible to work with micro-cells and high frequencies of 1.7 to 2.3 gigahertz, which would increase the convenience of the sets. It is expected that details of the standard will be worked out within the next six months so that full operation can begin in Great Britain before the end of 1992.

The chances seem relatively good that for the third generation of mobile telephone systems a common European standard will be accepted, which is very close to the British concept, since Great Britain also appears as a leader in this technology. Moreover, the three provider consortia have an international makeup: Motorola and the Spanish Telefonica belong to the group under the direction of Mercury Communications: STC has teamed up with the German Federal Postal Administration as well as with Thorn EMI and US West. British Aerospace is cooperating with the French Matra Communication, the British daughter company of the American concern Millicom and Pacific Telesis and the Japanese Sony. However, the research institute CIT remains skeptical about whether the PCN system can actually accomplish the task of freeing the broad mass of the population, not only in Great Britain, but also in other countries, from the limitations of the telephone cable, since, in addition to technical questions, there are also numerous economic questions—especially cost of the device, tariff structures and the spectrum of supplementary services—which are still unanswered. London analysts of the Japanese securities firm Nomura believe that PCN, like the introduction of direct dialing in the 60s, will lead to an increase in demand. For the time being, the target group corresponds to that of the existing cellular telephone networks Cellnet and Vodafone. Only with growing numbers of subscribers will the three consortia attempt a full)scale attack on the firmly installed network of British Telecom.

With a potential market of about 10 million users in Great Britain alone within the next 10 years, revenues on the order of 3 billion pounds are expected. But the initial investments for each provider are estimated at about 300 million pounds, and in the course of this decade costs are likely to climb to more than 1 billion pounds each. In the continental European countries, however, the introduction of mobile telephones will presumably progress more slowly.